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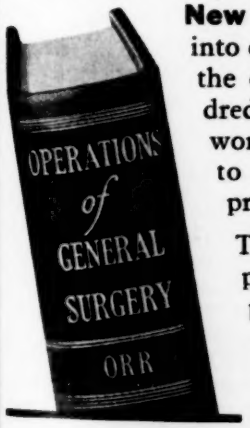
Operations of General Surgery



New Book, Just Ready!—Dr. Thomas G. Orr wrote this *new* book in order to bring into one handy volume the word and picture descriptions of what he has found to be the operations of choice on the entire body. He did this because he, like hundreds of physicians, recognized the great need that existed for just such a work—a work that would be up-to-date and useful, not only to the general surgeon but also to the surgeon and practitioner called upon to do surgery beyond their normal practice as a result of added wartime responsibility.

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AN ARSENICAL WITH A BRILLIANT RECORD OF EFFECTIVENESS AND SAFETY

MAPHARSEN

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THE CHANGES IN OPERATIVE GYNECOLOGY DURING THE LAST QUARTER-CENTURY

CHAIRMAN'S ADDRESS

LOUIS E. PHANEUF, M.D., Sc.D.
BOSTON

Much progress has been made in the surgical technic of all specialties in the last twenty-five years. Mass ligature of tissues has been supplanted by careful dissection and the tying of individual vessels. Large suture material has been replaced by fine sutures, with better healing. The advocates of the silk technic have shown that, with careful hemostasis and the use of the finest threads, inflammatory reaction in wounds or incisions so treated is almost entirely absent. There are those—and they probably form the majority of operators—who prefer catgut to silk. Taking a leaf from the book of the silk advocates, they have gradually reduced the size of their catgut until now a No. 0 strand may be used in place of the former No. 2, this having been made possible by the improvement in the manufacture of catgut. With the decrease of foreign bodies in sutured wounds, the severe reaction and abundant serum previously found have been eliminated, resulting in better and more rapid healing. The painstaking dissection of the tissues, the employment of the finest sutures consistent with the amount of tension present and perfect hemostasis are the three general factors which have had the most to do with the improvement of surgery in general.

CARCINOMA OF THE UTERINE CERVIX

Twenty-five years ago radium and high voltage x-rays were just beginning to be selected in the treatment of carcinoma of the uterine cervix. Irradiation then was usually resorted to for the inoperable cases. The radical abdominal hysterectomy to which the name of Wertheim has become attached was the method of choice in the treatment of this malady. It was well known at this period that a simple panhysterectomy offered but little chance of a permanent cure, since in this operation the parametria, the pelvic connective tissue and the iliac glands were left undisturbed. The mortality of the Wertheim operation at this period was high, the fatalities being due in large part to shock, hemorrhage and infection, and the prevention and management of these conditions not being so well understood as they are today. Blood transfusion had not as yet come into its own, the facilities for blood transfusion in the average hospital were very meager to say the least, and in certain cases the blood transfusion, if given at all, was more of an operation than the hysterectomy itself. The sulfonamide drugs used in the prevention of infection were of course unknown during the period under discussion. The Schauta vaginal hysterectomy for malignant disease of the cervix had but few adherents in America, surgeons here preferring the abdominal route. Considering the constant and rapid improvement in the technic of irradiation, with its low or absent mortality, simplicity of performance and primary results as good as or better than those of the Wertheim hysterectomy, it is not to be wondered at that the latter procedure was practically totally abandoned. As time has gone on and women treated by irradiation have been carefully followed over a period of many years, injuries of the large and small bowel the result of fibrosis resulting in intestinal obstruction at the end of fifteen to twenty years, according to some statistics, have averaged about 20 per cent. Again, deep and refractile ulcers of the bladder have been found after a number of years. This is no disparagement of radium and x-ray therapy, which doubtless have been used in most cases in the treatment of cervical cancer. As one of those who never entirely gave up radical pelvic surgery for irradiation, I have often wondered why an operation like the radical abdominal hysterectomy which had rendered such signal service could be absolutely abandoned. It has always seemed to me that there must be a place for it in the properly selected case. Recently a small number of gynecologists have reasoned along the same lines and have again turned to surgery in well selected cases. Those who are returning to the Wertheim operation today realize that the mortality must be kept at a low figure. This may be accomplished by selecting only group 1 cases, those of women in good physical condition; by cleaning the cervix and minimizing infection by a small preoperative dose of radium, when indicated; by preparing the patient carefully, paying particular attention to the blood; by the judicious use of whole blood and blood plasma transfusion preoperatively, intraoperatively and postoperatively, and by leaving the required amount of one of the sulfonamide drugs in the culdesac of Douglas after covering the raw areas with peritoneum. When this selection and technic are carefully followed, the convalescence of these women does not differ much from that of those who have been subjected to an ordinary panhysterectomy. Radium and high voltage x-rays are still reserved for some cases in group 1 and for groups 2 and 3, and are used as palliative agents in some group 4 cases. Diagnosis of early cancer of the cervix is one of the prominent achievements of the last quarter of a century.

CARCINOMA OF THE UTERINE CORPUS AND FUNDUS

In the management of corporal and fundal carcinoma no such radical change has taken place as in carcinoma of the cervix. A simple panhysterectomy with the

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ablation of the adnexa, with or without preoperative radium and postoperative high voltage x-ray therapy, has remained the treatment of choice. Improvement here has also come through early diagnosis. Malignant disease occurs in this area at a more advanced age than it does in the cervix. The advocacy of a diagnostic curettage for women who bleed irregularly at or after the menopause has been responsible for the recognition of the disease in its incipience. Even here irradiation has been of great benefit to a group of women advanced in age whose physical condition does not warrant as extensive an operation as a panhysterectomy. Although radium and x-rays have not shown such brilliant results in cylindric cell as in squamous cell cancer, nonetheless a sufficient number of patients with the condition have been benefited by this form of therapy.

UTERINE MYOMAS

Uterine fibroids are one of the commonest lesions in gynecology. During the last twenty-five years myomectomy has been resorted to with increased frequency. Originally it was thought that myomectomy on account of the increased dangers of hemorrhage and sepsis was a more serious operation than hysterectomy. Recent statistics have shown that through thorough asepsis and careful suturing these difficulties have been overcome, the mortality reported being no higher than that of supravaginal hysterectomy. The great advantage of myomectomy rests in the fact that the functions of menstruation and reproduction are not interfered with, an important desideratum in the younger group of women still in the childbearing age. All statistics show a rather large number of children born of women so treated. The continuance of menstruation is an important factor in the lives of these patients. The principles of supravaginal hysterectomy for fibroids were well established twenty-five years ago, and the results of this method were quite satisfactory. The conservation of the adnexa, when in a healthy state, in performing hysterectomy for myomas on women who have not reached the menopause is a principle accepted by most gynecologists. Our knowledge of the hormones of the ovary and of the fact that they continue their function of internal secretion for a certain period of time if a small amount of endometrium is retained at operation has led to conservation in this respect. That it is essential to maintain a good blood supply to the retained ovaries is a fact recognized by all operators.

The question of supravaginal hysterectomy versus panhysterectomy in the treatment of certain uterine lesions of benign origin in which fibroids play an important role has led to important debates before medical societies when the subject is brought up for discussion. An increasingly well planned and careful follow-up of patients has led to the discovery of a number of carcinomas of the retained cervical stump. It is argued by the protagonists of panhysterectomy that, if the cervix had been removed at the time of the original hysterectomy for fibroids or other benign conditions, carcinoma of the cervical stump could not have developed, a proposition that is absolutely logical and cannot be ignored. On the other hand, the advocates of supravaginal amputation of the uterus agree that the difference in mortality between panhysterectomy and supravaginal hysterectomy is greater than the incidence of stump carcinoma, that the vagina is shortened by panhysterectomy and that in the presence of a retained cervix more satisfactory marital relations may be permitted. In answering these allegations it may be said that it is true that the mortality of panhysterectomy is considerably higher in the hands of those who perform this operation only occasionally, but the same cannot be said of well trained specialists and experts in its performance. A glance at the statistics for the last ten years seems to prove this point. If the vagina is carefully dissected around the cervix it is not shortened appreciably, and it must be admitted that retaining the cervix for purposes of marital relations is a sound argument and one difficult to refute. One step in the progress of supravaginal hysterectomy during the period under discussion has been the opportunity for careful examination of the cervix, with the aid of a good light, under anesthesia before proceeding with the operation, as benign lesions of the cervix should be healed before or treated at the time of the subtotal removal of the uterus. To accomplish this end many methods have been suggested. These include trachelorrhaphy, amputation, electrocoagulation and cauterization. I have tried all these and come to the conclusion that in my hands thorough cauterization of the cervical canal and portio vaginalis has given the best results. Moreover, the gynecologist in choosing the type of hysterectomy for benign lesions is influenced by the number of stump carcinomas which come to his attention. In my practice, in recent years, the total has almost entirely supplanted the subtotal operation.

In the last decade irradiation by means of radium or x-rays has achieved greater popularity in the treatment of fibroids, but if this method is resorted to it should be an inviolate rule to precede it by a thorough curettage of the uterus in order to rule out malignant disease. In the opinion of many, irradiation should be reserved for those considered poor surgical risks and for those who have reached the age where the ovaries have ceased to function. In the young, whose ovaries should be conserved, and in the good surgical risks, surgery is still accepted as the better method of treatment.

VAGINAL HYSTERECTOMY

The trend toward vaginal hysterectomy in the United States has become more prominent since 1919. Performed before the days of abdominal surgery because of its great safety, it was almost entirely abandoned at the beginning of the present century when abdominal pelvic surgery became popular. During the last two decades it has been reborn, so to speak, and its performance in all gynecologic services is now commonplace. In some clinics its indications have been extended to the point of removing large fibroid tumors by morcellation. Two schools of thought exist in connection with this operation, the first including those who favor the suture method and the second, a small group, sponsored by James W. Kennedy of Philadelphia, including those who favor an improved clamp method because of its simplicity and rapidity. Vaginal hysterectomy plays such an important role in gynecology that it is not likely to be again abandoned.

VESICOVAGINAL FISTULAS

Originally vesicovaginal fistulas were the result of the trauma of childbirth or of protracted labor, and with the exception of those adherent to the pubic rami the operative treatment was not especially difficult since they were usually accessible. With the increase in operations on the pelvic viscera, hysterectomy and operations on the anterior vaginal wall and bladder, for example, the so-called surgical fistulas now greatly outnumber the obstetric. Because of their location, especially those situated high in a scarred and retracted

vaginal vault, their closure may tax the ingenuity of the operator. As a result, vaginal, intravesical and intraperitoneal methods have been devised. Most of these fistulas, however, are operated on, by the gynecologist, through the vaginal approach. Two extremely helpful adjuncts to the operation, probably not resorted to frequently enough, are, first, the Schuchardt incision, which permits such excellent exposure of the upper third of the vagina, and, second, suprapubic cystostomy. The latter, constantly employed by the urologist, has received but little consideration from the gynecologist, who usually inserts a self-retaining catheter through the urethra to keep the bladder empty. In many cases the catheter rests and causes pressure on the recently repaired area. This may militate against healing, whereas draining the bladder suprapubically places the sutured area at rest and leaves it undisturbed. This method is so advantageous in difficult cases that I wonder why I did not resort to it much sooner. The silver wire suture recommended by J. Marion Sims still has a place in the repair of vesicovaginal fistulas. More recently the metallic alloy wire suture, recommended by W. Wayne Babcock, has received deserved attention because of its greater tensile strength and because of the possibility of tying instead of twisting the suture.

TRACHELORRHAPHY AND AMPUTATION OF THE CERVIX

Trachelorrhaphy and amputation of the cervix are still valuable operations, although trachelorrhaphy seems to be losing some of its popularity. The current and useful methods of cauterizing the cervix after each labor, thereby overcoming erosion and ectropion and healing the smaller lacerations, has resulted in the less frequent performance of these operations. It should be emphasized that high amputation of the cervix should not be performed on one who is expected to have more children because of the frequent resultant sterility, because of the increased incidence of abortion and because of the dystocia in subsequent labors.

UTERINE PROLAPSE: CYSTOCELE: RECTOCELE

During the last twenty-five years the progress in this branch of gynecologic surgery has come through a better understanding of the structures that hold the pelvic viscera in their normal position. The modern reconstructive operations are based on sound anatomic and physiologic principles. The supportive structures are exposed by layer dissection rather than by superficial dissection of the surface mucous membrane of the vagina. As might be expected, better operative results have been secured. The operations of uterine suspension and fixation of the uterus to the anterior abdominal wall have definitely decreased in frequency. It has been recognized that fixation of the uterus to the abdominal wall is contraindicated during the childbearing period. In treating women who have passed the menopause there has been a decided tendency to operate entirely through the vagina rather than by the combined vaginoabdominal method in vogue in the early part of the century.

PELVIC INFLAMMATORY DISEASE

Although numerous organisms may be etiologically responsible for pelvic inflammation, three large groups predominate: specific infection, caused by the gonococcus; tuberculous infection, and the large group of pelvic cellulitis for which the streptococcus is generally responsible. It is evident in all large gynecologic services that pelvic inflammation is decreasing. The sulfonamide drugs are changing and may still further change the course of gonorrheal infection. It has been proved that these drugs limit the extension of the disease. For practical purposes gonorrheal infection in women may be divided into three stages: the initial infection involving the urethra, the vulvovaginal glands and the cervix; pelvic invasion, usually occurring at the time of menstruation, when the organisms attack the endometrium, the tubal mucosa, the ovary and the pelvic peritoneum; and the development of degenerative lesions resulting in hydrosalpinx, tubo-ovarian cyst, adhesions, fixed retroversion and the like.

The treatment of the first two stages is conservative, that of the third stage operative. If the sulfonamide drugs come up to expectations and if the infection is limited to the first stage, the treatment of gonorrhea in women may become entirely conservative and the extensive operative procedures carried out in the third stage may rarely occur. Tuberculosis of the female organs of generation has gradually diminished during the last twenty-five years, doubtless because of the systematically carried out prophylactic measures against the disease in general, its decreased incidence and its earlier recognition. This disorder does not play an important part in pelvic inflammatory disease today. Puerperal infection in the form of postabortal and postpartal pelvic cellulitis still demands the earnest efforts of the profession. Although prophylaxis has reduced the number of such infections, puerperal sepsis still heads the list of causes of maternal deaths in this country. Here again the prophylactic measures are beneficial and the sulfonamide drugs are proving to be valuable in arresting such infections, so that even here the operative treatment may be curtailed.

OVARIAN TUMORS

In connection with ovarian tumors, the progress established during the last two and a half decades has been due to better classification and the recognition of certain of the rare ovarian new growths. The significant work of Sampson and others has placed pelvic endometriosis on a sound basis. Although there is some disagreement regarding the etiology of endometriomas, gynecologists agree on the method of treatment. There are no great differences of opinion as to the operative management of ovarian tumors. It is the general opinion that small multiple cysts, follicular cysts and lutein cysts seldom need operative intervention. As far as the true neoplasms of the ovary are concerned, the opposite obtains, since a high percentage of the benign new growth are known to develop a certain degree of malignant degeneration and since it is obvious that the malignant ones should be operated on as soon as they are diagnosed. Whereas uterine myomas may be kept under observation, with safety, for an indefinite period of time—a significant number regressing at the time of the menopause—the same cannot be said of ovarian neoplasms because of the strong possibility of the development of malignant changes, slight or extensive. It is a safe rule, therefore, to follow the custom instituted many years ago—namely, that the treatment of ovarian neoplasms be operative and that operation be performed as soon as the diagnosis has been established.

SUMMARY

The last quarter of a century has shown significant improvement in surgical technic, with emphasis on careful dissection and ligation of individual vessels with fine material rather than mass ligature of tissues. The treatment of carcinoma of the cervix has changed from

surgery to irradiation with the return to the radical pelvic operation by a few gynecologists in early cases and good surgical risks. Carcinoma of the uterine corpus and fundus has remained a surgical lesion, surgery, however, having been complemented by irradiation. Improvement in the operation of myomectomy has resulted in more conservative management of these lesions in the young; supravaginal hysterectomy still remains the common method in use, while an increasing number of gynecologists have turned to panhysterectomy as a prophylactic means against carcinoma of the cervical stump. Vaginal hysterectomy has been reborn and improved and has now become a commonplace procedure. The increased number of surgical vesicovaginal fistulas has been responsible for the elaboration of new technics in the cure of this lesion.

Trachelorrhaphy and amputation of the cervix are less frequently done, these having been replaced in many cases by cauterization and electrocoagulation. A significant advance has been made in the surgical treatment of uterine prolapse, cystocele and rectocele through better anatomic understanding of these lesions and by reconstructing the deficient supports through the vagina rather than by depending on abdominal suspension or fixation of the uterus. Pelvic inflammatory disease has been handled more and more by conservative methods, and the sulfonamide drugs seem to show great promise in lessening and eradicating this condition. Ovarian tumors have been better classified, the rare tumors have been discovered, the tendency of malignant changes in these neoplasms has been emphasized and their early ablation has been strongly advised.

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TREATMENT OF WAR NEUROSES

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Major Spiegel and I have described brief, dynamic psychotherapy as applied to various types of war neuroses.[1] We have indicated the standard technical methods found by experience to be the most effective in the treatment of typical cases. However, psychotherapy is always an individual procedure, variable for each patient, requiring on the part of the therapist not only scientific knowledge but skill or art and a sense of timing. The following steps are carried out in most cases:

1. Release of repressed emotions in a process of so-called "abreaction."

2. Support of the patient's weakened and regressed ego through identification with the therapist's strength.

3. Desensitization from the memories of the anxiety producing situations by repetitive recounting of traumatic experiences, as the therapist helps the ego to discriminate between past danger and present safety and between dangers of the world of reality and inner anxieties.

4. Neutralization of the severe superego reaction of guilt to the actual, or sense of, failure.

5. Instilling insight into the relationship between the neurotic reactions to war and the past character and personality trends.

6. Encouraging the ego in its experimental attempts to regain mature attitudes and to attempt adult activities, thereby giving new confidence to the weakened and regressed personality.

In order to describe these procedures in a concrete fashion I have chosen to present an abstract of the actual therapeutic maneuvers in the treatment of one patient:

REPORT OF CASE

Depression with anxiety of one year's duration relieved by pentothal narcosynthesis and brief psychotherapy in one week.

A captain aged 25, who was sent to the Convalescent Center because of objective symptoms of depression, presented an expressionless face; his muscles were quite rigid, indicating a great deal of tension. He did not volunteer much information and never smiled, and his speech was retarded. The patient had been a flight leader in a pursuit squadron and had fought successfully until about his twenty-fifth mission, when a friend who had been flying on his wing went up in flames. However, he stated that he continued fighting and successfully completed his tour of duty, although feeling bad and depressed. He returned to the United States, refusing the chance of remaining as commanding officer of a squadron. He had been reassigned to a job in the United States which he liked very much and wanted to keep, but his depression continued and was accompanied by severe startle reactions. When any one came into his room and made a sudden noise or turned on the light he would jump out of bed with great anxiety. In addition to the depression and its concomitants, there was considerable insomnia with battle dreams, which repeated some of the very severe traumatic incidents of his combat experiences. However, he maintained fairly good control of himself and continued to fly. He attempted to decrease the anxiety and depression by drinking, but the only result was an increase in anxiety. He stated that he tried hard to forget his experiences but found it impossible.

During this initial interview I learned that he was single, a university graduate who studied hard, made excellent grades and was given a fellowship in animal genetics which he could not continue because he entered the Air Forces. There was no history of any previous depression and no incident that showed that he could not adjust himself to his normal experiences and environment.

That afternoon I gave him 0.25 Gm. of pentothal sodium intravenously. He was then told that he was up in the air on a strafing mission and that the man on his wing was aflame, and then I commanded "Go ahead and talk." Immediately he went into an emotional reaction, shouting to his friend, whose name was Granny, to "pull up and bail out."

"Why doesn't he pull up, why doesn't he bail out? I hope he doesn't think it's my fault. He's such a nice boy. Such a swell fellow. I hope I'm not responsible for his death. We were together all the time. He lived in the same tent with me and would share anything that he had. When we were on low rations he would give as much as he could to every one else." Accompanying all this were tears and sobbing and repetitions of "I hope he doesn't think it's my fault. He wasn't a good flier. Oh, if I had only picked out another spot, a safer target, but that is where they told me to go, right over those trucks. If I had gone in some other place he wouldn't have got it. Why did he do it? He should have stayed in formation. He didn't stay where he was supposed to. He came up and took the lead position with me. Maybe I should have given a talk before we went, about staying in formation. Why didn't I do that?"

Then he talked about the letter they wrote home to Granny's family and how he couldn't bear to read it. That would start it all over again. "I can't get him out of my mind. I couldn't see his family because they probably had forgotten and I didn't want to stir them up." In this fashion he went over and over the traumatic situation, crying and sobbing.

This is the phase of abreaction.

As this reaction subsided he was allowed to close his eyes and sleep for a few moments. Then I handed him a lighted cigaret and awakened him. He looked at his watch and stated

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From the AAF Convalescent Center, Don Ce-Sar Place, St. Petersburg, Fla.

Read in a panel discussion on "Neuropsychiatry" in the General Scientific Meetings at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 13, 1944.

1. Grinker, R. R., and Spiegel, J. P.: War Neuroses in North Africa, the Tunisian Campaign (January-May, 1943), New York, Josiah Macy Jr. Foundation, September 1943; Narcosynthesis: A Psychotherapeutic Method for Acute War Neuroses, Air Surgeon's Bull. (No. 2) **1**:1 (Feb.) 1944; Brief Psychotherapy in War Neuroses.[4] Management of Neuropsychiatric Casualties in Zone of Combat.[2] War Neuroses in Flying Personnel.[3]

"I must have been asleep. I had a dream about Granny." His pillow was wet with tears. He said "Gosh, I perspired a lot."

I told him "No, you were asleep for only a few minutes but you talked to me about Granny and you told me all about it. Let's talk about him some more."

Then in a conscious state he went over the situation again, just as he had done when asleep, but one more bit of information was elicited; Granny was not appointed a regular flight leader because he was a mechanical flier; instead, the patient was given the job. Then the patient talked about another boy who crashed in a low level flight, maintaining radio silence according to instructions although he was in need of help. Then he told of feeling bad about killing the Germans. I ended the interview by telling him that he had assumed a responsibility for the death of Granny that did not seem to be based on fact.

Identification with the therapist and desensitization has begun.

The next morning the patient entered the interviewing room and stated "I feel like a load has been lifted from my mind, like a great relief. I slept well last night, awakened once and went right to sleep again. I had no dreams. This morning I feel good." There was a silence. Then he said "I guess I blamed myself unnecessarily." I said "Yes you did. Now let's try to figure out why you blamed yourself. Tell me something about your background." The patient then told me he lived on a farm of 650 acres. His father was a successful farmer who made enough to enable four children to go to college. The first child was born dead, the second was the patient and then there were two sisters each two years apart and the oldest two years younger than he. He had one brother nine years younger. The mother was very mild mannered and very religious. The children went to Sunday school and church, though not forced to do so. The father was very kind and gentle but strict in his attitudes. He rarely spanked the patient, but he expected him to live up to his responsibilities. If he did not, he would look pained and disappointed and tell him "This was your job," and then do it himself, which the patient stated was worse than a spanking. He was always on very good terms with his father and would rather work with him than any one else.

He then began to talk about his commanding officer and told how this man was an exceptionally strong leader; a person who went on the most dangerous missions himself; a man who was fair and expected every one to do his job.

I said to him "Your C. O. was very much like your father." The patient stated "You know, I often thought he was like my father, doing things he wasn't supposed to do and doing everything to help us but expecting the best from us. Of course not in the same way because he was a fighter." I said "Now let us summarize the things for which you blame yourself. Granny's death—but you were ordered to hit the target even though dangerous; you could do nothing else and could not be responsible for his death. Secondly, you blame yourself for not giving implicit formation instruction, but you were all experienced fliers and had been trained in formations for six months and every man knew his position. You blame yourself for killing the Germans but you know that was to save the lives of our own troops. You blame yourself for the boy who crashed on the low mission, but it was agreed beforehand that radio silence was to be maintained. You blame yourself for not communicating with Granny's family, but you know that it is not good to stir up a sorrowing family again. So you have a lot of disapproving attitudes toward things which are not really your fault. You behave as if you were still reacting to a disapproving attitude that your father might have had toward you. You behave as if your father's image were looking at you with a disappointed expression."

Here we see a beginning neutralization of a severe superego.

The patient said "Well, I have always taken responsibilities and duties seriously. I have never been able to feel that I did give my best unless I worked terribly hard."

Then I stated "And now your behavior, which is depressed and completely unhappy, is just as if you were intent on punishing yourself and never letting yourself have any fun or pleasure."

The patient stated "That's it. I can't enjoy things. I wonder why I take his death so seriously." I stated "Yes, I wonder why" and terminated the interview.

The next day the patient entered the interview smiling and stated frankly "I must say I haven't felt so good as I feel now for a long time. I slept well and had no dreams." He felt as if he could carry on. He now realized that he took his responsibility too seriously but always had felt as if he didn't want to let any one down and then told about a younger pilot, 21 years of age, whom he had taught to fly formation. The younger pilot looked up to him as an older man or father. I said "Something like your younger brother," and he answered "Yes, he used to think I was a great guy. I taught him how to shoot, how to hold a gun and how to play all sorts of games. Our C. O. always spoke quite frankly about his opinion of the conduct and performance of the boys; he either disapproved or complimented. If a fellow did his work properly and if he asked for a day off he always got every consideration."

I explained to the patient then because of guilty feelings he was punishing himself for Granny's crash (which had happened one year before). I explained to him that this feeling had persisted without any cause in reality. Therefore, this sense of guilt and the punishment which he had been giving himself must be due to some inner feeling and that it was not possible to master such feelings unless we unearthed them and brought them to light.

I told him "Now you have told me nothing but good things about Granny, you told me how attached you were and what a fine fellow he was, but I think your guilty feelings about him are due to some negative attitudes toward Granny that you have not yet discussed. Perhaps these feelings were unconscious and a source of your sense of guilt."

This step is the beginning of the loosening of unconscious hostility derived from part of his precombat personality.

The patient then said "Of course no one is perfect, but Granny was the easiest person to get along with. He drank frequently and had to be taken care of. Once when we were in the desert and got drunk Granny tore up the tent in the middle of a sand storm. There was a family quarrel with the four tent mates."

I then drew his attention to the fact that Granny was not made flight leader. Was Granny envious of the patient? He reconstructed the flight; Granny was flying on the left wing of the patient, who was the leader. Granny flew on the left slightly behind, but he veered to the right and forward, to accompany the patient in the lead position. I asked him whether he interpreted this as if Granny were out to take the lead as a sort of rebellion. He said he didn't think so, but that he didn't give way because he wanted to maintain the proper formation in the flight. Then he said "Maybe that is why I feel so guilty, because I didn't give way." The result was that Granny was hit by flak and slid over the patient's plane to the right, on fire.

I told him "I think that there are some definite unconscious negative feelings toward Granny which might be responsible for your sense of guilt, and hence depression, and we will take that up in the morning."

The next morning the patient entered the room, at ease and in good spirits, and said "Colonel, I have been thinking a good deal about the situation of Granny, and some clue you gave me yesterday brought me to some sort of a conclusion. Probably it is silly, you might not think it is important, but I have been thinking about it." [When a patient says he is going to tell you something silly you prick up your ears because it is probably going to be the most important thing you will hear.] "I always decided that I wanted to do things and get ahead. I was very ambitious. I wanted to be better than just average and when I decided on any ambition I worked very hard to accomplish it. Sometimes I would win and sometimes I would lose but I would always work for whatever I wanted. When I was in school there were four of us on a cattle judging team. I wanted to be top man, but there was another fellow on the

team who lived with me and he was awfully good. I had to fight it out with him. We fought it back and forth all year round. In my junior year I was able to beat him. The next year he beat me. There were no hard feelings about it. It was competition but we still were friends."

The patient now begins to test his own inner attitudes in the light of reality.

The patient then repeated several other incidents of competitive relationship with other men and it became clear that he took no pleasure in winning over people who gave him no struggle. He always wanted to win out over some one who he felt was superior to him. "When I joined my outfit it was the same way. We had a C. O. who believed that the leadership in the squadron should come from the boys themselves. There were eight places for flight leaders and the men had to win the job. Even after a man became flight leader he had to work hard to keep it. We were always practicing, practically all the time. Two or three would go up and try to outfly one another. When we finally went overseas I wasn't able to take a lead position but I became an assistant flight leader. I was disappointed but worked hard just the same. Finally there were eight of us who were flight leaders, including Granny and myself. But we weren't always given the job of leading the flight. Our C. O. wanted to see how we were able to fly under somebody else's orders. We didn't always fly leader, we frequently flew wing. Once I went up with our C. O. to try to outfly him. I fought him hard and I beat him. When we came down I didn't say a word to anybody that I had beaten my C. O."

You now see how the patient has arrived at the logical conclusion without a direct interpretation. He has worked this thing out himself. There has been a certain amount of direction in the interview, but he has been able to think along the directed lines all by virtue of the fact that he has had an initial emotional release and ego support. But the release alone was not sufficient. He still didn't know the reason for the load of guilt that he had been carrying.

I then explained to the patient the nature of unconscious attitudes which were not tempered and modified by civilized realities; that our unconscious aggressions which arose from the instinctual depths within us were derived from our animal backgrounds. Sportsmanlike competition was a civilized modified type of aggression, but the real hostile competitive spirit is still based, as far as the unconscious is concerned, on the concept "to kill or to be killed." As a result, victory in competition would mean, unconsciously, as if the defeated person had been destroyed as the direct result of an unconscious wish to be rid of that person. Hence, when competition was followed by the death of an individual, the person felt actually as if he himself had killed that individual.

He grasped this interpretation and in the same interview was given another pentothal injection. He immediately started out by saying "I used to think I was responsible for Granny's death. I used to feel as if it were my fault. I know now that it is just one of those things that happen and I couldn't help it. He was a fine fellow. I was scared to go on that mission. He and I went into the mess hall that night for some supper, but we just nibbled; we couldn't eat. I had no cigarets, but Granny had two packages and gave me one of them. I smoked half a package of cigarets. Granny was generous like that. I was terribly nervous. It was a dangerous target, but off we went in a tight formation. There was a terrible amount of flak over the target. The trucks blew up and I felt good when I saw it. I don't know why Granny came over and tried to take the lead from me. I flew under his lead the day before and I stayed in formation. I can't understand why he broke formation and came up toward me and then got into a heavy flak position. But I didn't give ground. I know now we were jealous of each other and we were really fighting against each other for the job."

When he awakened he felt a little dizzy and thought he had been sleeping. We summarized the whole material of the interview again before terminating the session.

The next day he came in and said he felt perfectly well. He slept soundly all night, had no dreams and felt that a great load had been lifted from him. He wants to go back to duty and feels he can carry on. When he went home for overseas leave his people recognized there was something the matter with him and didn't ask him any questions. The result was that he kept all the experiences to himself and deliberately tried to forget, but there was always that load on his stomach. He now understands that the only way one can forget is to suffer the pain of remembering first. He remembers episodes he thinks are funny and amusing, incidents that happened in his squadron overseas. He is beginning to remember and talk about little experiences. Prior to this he had not been able to think about these because they always led his mind into situations which became painful. "It is silly for intelligent people to let things bother them the way I did." His ego now has confidence in its strength and can dwell on the past without anxiety.

The question arises whether we should go on in further interviews and therapy to bring to consciousness the obvious unconscious hostility he had to his own father, or should we stop at this moment and return him to duty. We have been successful in removing the load on this man's personality which he has been carrying for a year. This load was the direct result of his combat experiences acting on his specific character and personality. As a result of the incorporation within his personality of the idealized figure of his father, we have a man who has been a successful student, a successful pilot and a successful leader. We can predict from this personality structure that he will probably continue to be successful in life. Along with this compulsiveness toward success we have to recognize the severity of his ego ideal, which would make him some trouble if he came into a situation in which he could not be successful, but we have already dislodged and disturbed that ideal. The therapy has been directed largely to weakening the severity of his father's attitudes to permit him to accept his repressed aggressions. That is the load that is off his chest. We can be assured that the loosening and easing of this pressure on him will continue perhaps to the extent that his ego ideal will be strong enough but not too severe. Therefore we did not treat him any further but returned him to duty. Six months later reexamination revealed him to be entirely well and competently performing his flying duties.

In the therapeutic process there was an initial loosening of the emotion, the substitution of a new, less severe superego and then the confrontation of the old guilt with reality, which forced the patient to look inside himself for the source of his reaction. It might be said in many cases that it is harder for a man to face his own unconscious than to face the fire of the enemy, but it must be endured if recovery is desired.

Overseas we were concerned with the direct and demonstrable effect of combat.[2] In the time that elapses before these men return to the United States a change seems to take place in the pattern of the neuroses. Old

2. Grinker, R. R., and Spiegel, J. P.: The Management of Neuropsychiatric Casualties in the Zone of Combat, in Solomon, H. C., and Yakolev, P. I.: Manual of Military Neuropsychiatry, Philadelphia, W. B. Saunders Company, 1944; War Neuroses in North Africa.[1]

patterns of neurotic behavior seem to engulf the newer reactions, and the total picture stands out sharply. The reaction to war is seen to be a repetition of old reactions to previous conflicts.[3] There are no great resistances against the release of the old attitudes which have been mobilized by the new war situation. Hence our therapeutic achievements are frequently more than a removal of recently developed anxiety but often include an unexpected beneficial reorientation of the total personality. The technics are not difficult nor are they lengthy, but they require a thorough knowledge of the dynamic forces operating in human personality.[4]

THE MANAGEMENT OF HEAD AND SPINAL CORD INJURIES IN THE ARMY

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The management of head and spinal cord injuries can never be a stereotyped, fixed method in the army. The type and degree of injury, nature of the traumatizing agent, mechanism of the trauma and circumstances under which initial care must be rendered vary so much that good clinical judgment rather than strict procedure is the all important factor in care of such injuries. The echelon for care of these cases in combat is the same for all types of trauma. The wounded soldier passes through the battalion aid station and clearing station of the division, and thence back to an evacuation hospital. A field hospital unit may, under some circumstances, be attached to the clearing station for the definitive attention of the most seriously wounded, but usually such detailed care is rendered at the evacuation hospital. From any one of these medical stations the soldier may be returned to duty with his own unit after receiving necessary care. Patients who cannot be promptly restored to a duty status or any who need prolonged medical care are sent back to a general hospital, from which those who are ultimately restored to a duty status are sent to replacement depots for reassignment as casuals to other units. Those who are unfit for any duty or for foreign duty are returned to our named general hospitals in the United States. Most of the latter hospitals are rehabilitation centers where any and all definitive medical and surgical attention can be rendered to our troops. From this echelon, troops are either discharged from the army after receiving maximum hospital benefit or are sent to special convalescent and reconditioning centers to be restored to a duty status.

The management of head and spine injuries in the overseas noncombat areas is essentially like that in the American zone of the interior; viz., hospitalized and definitively treated promptly without the factor of rearward movement away from combat area.

3. Grinker, R. R., and Spiegel, J. P.: War Neuroses in Flying Personnel Overseas and After Return to the United States, Am. J. Psychiat., to be published.

4. Grinker, R. R., and Spiegel, J. P.: Brief Psychotherapy in War Neuroses, J. Psychosom. Med. **6**: 123 (April) 1944.

Read before the American Neurological Association, New York, May 19, 1944.

Read in a panel discussion on "Neuropsychiatry" in the General Scientific Meetings at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 13, 1944.

HEAD INJURY

The general size of the head injury problem may be ascertained from a review of battle casualties for the year 1941-1942. For that year head injuries made up 5.9 per cent of all wounds sustained. This figure would, of course, be slightly higher if one included those killed in action, for, in those, wounds of head, chest and abdomen run high. In general, then, it may be said that 6 of every 100 battle casualties are head injuries. If we break this down further, we note that slightly more than three fourths of this total group are closed head injuries with or without a simple skull fracture and the remainder are open head injuries of varying severity.

Closed head injuries in all echelons receive conservative therapy, varying according to the necessity or judgment of the medical officer. During the acute phase in the first seventy-two hours the patient is placed on a modest fluid intake, 1,500 to 2,000 cc., and a light diet. A lumbar puncture may be done if deemed therapeutically necessary; otherwise it is usually not done until after the first forty-eight to seventy-two hours, when it may be desirous to know the pressure and whether fluid is blood stained. Sedatives are used with caution, since a simulated stupor can easily be produced in this acute phase following a concussion, or again it may mask bleeding. Hypertonic solutions are not used routinely but are used when edema is evident and producing symptoms after the first day or two of injury. Normal serum albumin is probably the best hypertonic solution and has been widely distributed through army hospitals. X-ray films of the skull are always taken, but until the patient's shock and primary condition is first treated, films are withheld for the first day or two, unless there are very pertinent reasons why an x-ray should be taken sooner. In some of the forward stations closed head injuries have been evacuated in ambulatory fashion as soon as clearly conscious. In general, however, the usual program of bed rest is immediately instituted and maintained for two or three or more weeks according to the severity of the head injury, the latter judgment being based on the duration of loss of consciousness and the degree of disturbance in the temperature, pulse, respirations, pupillary abnormalities and focal neurologic signs. The same criteria are also utilized prognostically as to whether the soldier will be rehabilitated for duty or returned to the zone of the interior. A number of installations here at home have carried out a somewhat more active program in management of the closed head injury group and with gratifying success; viz., starting rehabilitation soon after stabilized, clear consciousness is regained. Thus, in milder cases latrine privileges may be permitted after the first twenty-four to seventy-two hours and then a graduated program of activity over a period of the next ten days with return to light duty in about two weeks and full duty in six. Incidence of post-traumatic syndromes appeared especially low when treated in this manner.

We have observed that patients having mild head injuries are often more likely to complain of headache, dizziness, insomnia, irritability and trouble in concentrating than those receiving a more severe injury. Also it must be remembered that treating a head injury patient who may be emotionally unstable, in an overseas theater, is just a bit different prognostically at least from treating the same patient here at home, since the element of secondary gain is a potent factor in production of a neurosis in many of these overseas cases. Particularly does one see this in the group alleged or

actually to have suffered a concussion due to blast. Many of those returning from overseas allege blast concussion as a cause of their persistent headache and associated nervous symptoms. As a matter of fact, concussion due to blast is quite unusual. The individual who has suffered organic brain damage due to blast invariably gives a history of having his breath knocked out, of coughing up bloody sputum, bleeding from the ears and nose and a period of complete loss of consciousness. On examination, these soldiers show flash burns, fissuring of the skin, perforated or hemorrhagic eardrums, conjunctival hemorrhage, signs of intrathoracic or abdominal pathologic changes and focal or general signs of organic damage to the central nervous system. All head injuries receive a most painstaking neurologic survey in the general hospitals, including electroencephalography, pneumoencephalography as indicated, mental tests and psychiatric studies during the course of hospitalization.

As for the outcome of closed head injuries, we have no definite overall figures. However, we do have data on several series of sufficient size to get a fairly good picture of what is happening to this group. In one overseas series of 131 patients, 79 per cent returned to full duty after an average hospitalization of twenty-five days, 15 per cent developed post-traumatic syndromes for which they were evacuated to the zone of the interior, and 6 per cent were still being rehabilitated. Of the group that are returned to the zone of the interior, the majority are discharged from the army, many with a pronounced psychogenic display, others with post-traumatic encephalopathies of such degree that they could not be rehabilitated for duty. Approximately the same statistics apply to the continental head injury group as far as we can ascertain, though again we have no accurate data on this.

Open head injuries comprise about one fifth of all head injuries. Few statistics are available at present concerning mortality or morbidity rates in head injuries caused by missiles in the American army personnel. In one series of 22 acute craniocerebral injuries of open type (dura torn, cortex injured, metallic fragments in the brain and several with grossly damaged brain and osteomyelitis of the skull) there were no deaths after operation, 36 per cent were returned to duty, 59 per cent were evacuated to the zone of the interior and 5 per cent remained in the hospital under continued rehabilitation after a period of sixty-eight days.

In all probability, our overall figures will compare favorably with those mortality rates reported by the British. Eden,[1] in his posthumous paper, gave a mortality of 23.6 per cent in 102 penetrating wounds of the brain and but one death in 208 nonpenetrating injuries. Ascroft [2] has reported a 15 per cent mortality in 292 penetrating injuries and two deaths in 224 nonpenetrating cranial wounds. In the American forces, serious head injuries sustained in combat are given early definitive treatment either in field hospitals manned by skilled auxiliary surgical units or more often in evacuation hospitals by trained neurosurgeons. The most important complication remaining is that of infection, particularly in those cases in which early and complete débridement of cranial wounds has not been accomplished. In Eden's and Ascroft's series, fatal infection supervened in 3.7 per cent and 10.8 per cent respectively of patients operated on. This may be compared with the figure of 36.5 per cent in Cushing's series of grave head wounds treated on the western front in 1918. British experience has suggested also that chemotherapy with sulfonamides in fresh wounds does not reduce incidence of infection when débridement is delayed.

Two new substances, penicillin for control of infection and fibrin foam for control of hemorrhage, are now receiving clinical trial under combat conditions. In the battle of Sicily, 25 cases of cranial wounds infected from three to eight days were treated with penicillin by British neurosurgeons.[3] Two patients died a few hours after admission to the hospital, and there was a total of five deaths, a remarkably low mortality rate. Obviously, penicillin therapy in such grave infections is a promising method of adjuvant treatment. In 13 brain abscesses and similar formidable cranial infections treated with the aid of penicillin at Walter Reed General Hospital during the past year, there were only three deaths. In these cases it was proved conclusively to attending surgeons that surgical drainage must be continued during the period of penicillin therapy and that penicillin therapy alone is inadequate.

Fibrin foam [4] for control of hemorrhage from central and peripheral nervous systems has been used at Walter Reed General Hospital in approximately 200 cases, including such operations as formal craniotomies for tumor, repair of skull defects, compound depressed fractures of the skull with cerebral laceration and in peripheral nerve anastomoses and grafts. It is a promising method of hemorrhage control, particularly from the brain that has been lacerated by trauma or operative manipulation. As the supply increases, overseas neurosurgical units will be supplied and cerebral débridement will be especially facilitated by its use.

When the patient with a healed open head injury reaches the zone of the interior and is admitted to one of our neurosurgical centers, he presents one of two problems, and frequently both. The first comprises an evaluation of the extent of the existing cerebral injury in relation to future military duty or to disposition to another status. This is carried out by detailed neurologic and psychologic studies augmented by electroencephalography and pneumoencephalography. The second problem is that of repairing skull defects in otherwise recovered individuals for the purpose of completing rehabilitation for duty. The repair of such skull defects with tantalum plates 0.015 inch in thickness, by inlay or other technics, has been accomplished on 35 patients at Walter Reed General Hospital during the past year. Half of these patients have thus far returned to a duty status.

Before the skull defect is repaired, evaluation of the existing cerebral scar is attempted. In none of these cases was post-traumatic epilepsy a feature and, indeed, this complication of an open head injury has thus far been of minor significance. Records of cortical electrical activity taken through the tantalum plates are unchanged when compared with preoperative records. There is no technical aspect of tantalum plating that would preclude craniotomy for resection of an epileptogenic scar at a later date. Prophylactic excision of such scars is not considered feasible.

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2. Ascroft, P. B.: Neurosurgical Experience in Egypt and Libya, Arch. Neurol. & Psychiat. **51**: 295 (March) 1944.
3. Cairns, H.: Gunshot Wound of the Head in the Acute Stage, Brit. M. J. **1**: 33 (Jan. 8) 1944.
4. Ingraham, F. D., and Bailey, O. T.: The Use of Products Prepared from Human Fibrinogen and Human Thrombin in Neurosurgery, J. Neurosurg. **1**: 23 (Jan.) 1944.

SPINAL CORD INJURIES

Spinal cord injuries constitute slightly less than 1 per cent of all battle casualties. No compilation of data is yet available. From one very carefully studied series of 41 cases incurred in battle zones,[5] some pertinent information may be drawn. Eighty-five per cent of this group were incurred in battle, 15 per cent in combat zone accidents. Over one half occurred in the infantry (infantry 15 per cent, field artillery 19 per cent, armored division 10 per cent, medical corps 5 per cent, engineering corps 5 per cent and all other units 15 per cent), one half occurred in the thoracic spine (cervical 7.5 per cent, thoracic 55 per cent, lumbar 35 per cent, sacral 2.5 per cent), three fourths were caused by foreign bodies (shell fragments twice as often as bullets) and the remainder by fracture. Sixty per cent of those caused by fracture occurred at the 1st lumbar and the remaining 40 per cent very nearby (9th, 11th and 12th thoracic).

Incomplete lesions of the cord were more common than complete lesions, this referring to a functional and not an anatomic lesion. Lumbar lesions were the least serious, since often it was a compression fracture and only a root involvement in this region. Sensory examination was the most accurate guide as to the level and bladder signs the best guide as to severity of the lesion; this was also a good indication for the urgency of operation. Bedsores developed in cord injuries at any level but most frequently in the complete cord lesions in anesthetic areas. X-ray examinations were a preoperative necessity, though often they did not fully indicate the degree of bony damage. Spinal manometric tests were of value in determining whether and when to operate. Of the 10 cases of fracture, 5 showed a complete block and 3 incomplete; in 2 no spinal tests were performed. The period of elapsed time from injury to surgery in these more severe lesions of the cord varied from eight hours to several weeks, the delay for the most part being due to other severe injuries, presence of infections, late onset of symptoms and, in a few, slow evacuation to the hospital. Operation was performed in a total of 31 cases, of which 12 were complete and 19 were incomplete lesions. There was improvement in all incomplete lesions operated on and no improvement in any of those that were complete. Of those in which operation was not performed, improvement occurred in 1 incomplete case and none of the complete showed improvement. Best results were obtained in those cases in which the pathologic condition was mostly extradural. No definite correlation could be made between good results and a short time interval for operation, since the cord showed a surprising ability to recover after long intervals in the incomplete lesions. The reasons for operation on complete lesions were cerebrospinal fluid leaks, presence of block and x-ray evidence of cord compression. There was a total of four deaths in this group of patients. All were complete lesions of the cord, and death was due to pneumonia and lung abscess in 1 (at the level of the 2d thoracic), pulmonary emboli in 2 (level of 6th and 12th thoracic) and the fourth patient, with a lesion at the 12th thoracic, died three months after injury, no postmortem being done.

From these cases it was learned that spinal cord injuries suffered mostly from the chain of evacuation. It was not so much the number of hospitalizations but the time spent in traveling which was so damaging to cord injuries. Bedsores developed frequently during postoperative evacuation or enlarged rapidly if already present. Circular casts were wholly unsatisfactory, and only bivalved casts are now being used during transportation. The majority of such injuries reach the zone of the interior for convalescence and disposition in a stable neurologic status. The original wounds are healed and definitive surgery has been accomplished. In addition to a reevaluation of the neurologic status, there remain the problems of bladder infection, decubitus ulcers and supportive nursing care in particular cases.

It is unwise to assume in every instance that the need for restorative neurosurgery has passed. Decompressive laminectomy is futile in late lesions of the spinal cord proper but may be of benefit in the region of the cauda equina. In 2 instances of compression of the cauda equina by incompletely reduced dislocations of the lumbar vertebrae, laminectomy performed at Walter Reed General Hospital has relieved pain and possibly played a role in a subsequent tardy and partial restoration of function. In 1 instance of complete section of the cauda equina by a missile, extremity pain was reduced in intensity by neurolysis of the extensive scar. Stabilization of a fracture-dislocation of the cervical spine may be necessary. In a rehabilitation hospital, however, the major task of definitive neurosurgery has passed.

Primary among the problems besetting the spinal injury is that of bladder dysfunction and subsequent bladder infection. Patients are received with indwelling urethral catheters or with perineal urethrostomies or suprapubic cystostomies. The duration of transport and concomitant difficulties of treatment during this period of time may impair the efficacy of urethral drainage. At Walter Reed General Hospital [6] tidal irrigation is practiced through a urethral catheter with maximum and minimum pressure of 12 and 6 mm. of mercury, boric acid being used as an irrigating medium. In cases requiring long continued drainage, perineal urethrostomy is performed. Suprapubic cystostomy is reserved for those cases in which urethrostomy is not practical because of stricture, large vesical calculus formation or prostatic abscess. Repeated cystometry is done for evaluation of returning bladder reflex activity.

The use of the Stryker turning frame has prevented the occurrence of fresh decubitus ulcers, promoted the healing of those already present and facilitated to a profound degree the nursing care of these patients. Suspension of the feet, freeing them from contact with the frame or bedclothes, and frequent and effortless turning of the patient promote nutrition and healing of pressure areas. Bed linen change offers no problem on such a frame. Physical therapy of the affected musculature is made easy by the height of the frame and the ease of turning the patient. The frame may be transported readily for x-ray studies and, finally, all necessary nursing and therapeutic movement of the patient may be accomplished by a single attendant.

Early grafting of the decubitus ulcer after surgical and chemical cleansing of the wound reduces bacterial infection and concomitant drain on the patient's resources. Such massive grafting has been carried out with split thickness grafts secured with the Padgett dermatome. Although denervated grafts are peculiarly susceptible to the adverse influences of soiling and pressure, they do well with the aid of the Stryker frame.

5. Klemperer, W.: Statistical Report on Spinal Cord Injuries, M. Bull. N. Africa Theater of Operations **1**: 12 (March) 1944.

6. Lewis, L. G.: Treatment of the Neurogenic Bladder After Acute Spinal Injury, S. Clin. North America **23**: 1505 (Dec.) 1943.

Rehabilitation is in part carried out by the physical therapy department and later in the reconditioning programs for those being prepared for a return to duty. Otherwise, when maximum hospital benefit has been achieved, they are discharged to their homes or to a Veteran's facility. Certainly it cannot be said that any striking advance has been made in the late care of spinal cord injuries, yet application of the factors noted has reduced the subjective distress of these unfortunate individuals and made possible their continued care in large numbers.

SUMMARY

It may be said that head and spine injuries occur with moderate frequency in modern war and present a serious problem of management when they are of the open type head injuries or more severe variety of spinal injuries. The description of the echelons of evacuation and the management at each level has made it apparent that early skilled medical attention is rendered to all acute craniocerebral and spinal injuries in every echelon. In general, it may be said that closed head injuries do best if given early progressive activation and early return to light duty. The more unstable of this group thus do not as readily become ensnarled in a compensating neurosis. Open head injuries remain a problem from the standpoint of degree of encephalopathy and repair of skull defects. The medical department has anticipated the ever increasing problem of head and spine injuries with the rising tempo of the war, and as time goes on more data regarding definitive treatment and general management will be forthcoming.

PSYCHIATRIC EVALUATION OF THOSE RETURNING FROM COMBAT

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Reports from overseas theaters indicate that the incidence of psychoneurotic manifestations induced by the physical and emotional stresses of war are frequent occurrences. In the theaters of operation various technics have been devised for the management of these cases with due regard for the severity of the illness and the difficulties of therapeutic endeavors under trying local situations. Oftentimes mere rest and reassurance restore to active duty the men with less severe reactions. Other more serious cases are rehabilitated for noncombat duty in the rear of the fighting lines in the theaters of operation. Still other cases are of such severity that return to this country is necessary. As the war goes on the occurrence of these cases will probably continue. There are also large numbers of men who have completed a prescribed tour of duty in the theaters of operation and who, pursuant to War Department policies, are rotated back to this country. A certain percentage of these men show evidences of persistent symptoms akin to those common in civilian psychoneurotic illness. It is clearly evident that the problem of the care of these men is a most important and pressing one and that our programs for this care will soon need to be fully developed.

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The Army Air Forces found it necessary early in the war to adopt a rotation policy for its flying crews. The dangers and hardships of modern combat flying are so great that practically all authorities of the A. A. F. and the R. A. F. were in agreement on this need. The human machine can stand just so much and then it needs a period of "being put out to pasture." A certain percentage of these men returning from overseas on rotation policy showed evidence of persistent psychoneurotic symptoms. This state is diagnosed at this time as "operational fatigue," which is by definition a reactive state resulting from the physical and emotional stress of continued danger and hardships. The intensity of operational fatigue may vary from minimal reactions to severe emotional disturbances. Minimal reactions are normal to these stresses and are not clinically significant. Operational fatigue is used as a diagnostic term for the following reasons:

(*a*) The term neurosis or psychoneurosis ordinarily denotes the presence of symptoms which are basically dependent on unconscious conflicts which arose early in childhood.

(*b*) Operational fatigue is basically dependent on recent situational experiences and conflicts and, as seen at present, has not yet become irreversibly bound to earlier unresolved conflicts over instinctual expressions.

(*c*) Although there is often a close similarity in the clinical manifestations of operational fatigue and psychoneurosis, the differences mentioned warrant the use of a distinguishing term for those cases which fall in the former category. Later the reactions may spread to and involve earlier residuals and thereby justify the latter diagnosis.

The term "operational fatigue" as used does not denote the existence of an organic factor as a specific agent nor does it implicitly or explicitly deny the basic importance of psychologic conflict in the production of the state designated. Some authorities deny the validity of these reasons for the use of the term "operational fatigue" and feel that organically minded opponents of dynamic psychiatry may use this to deny the essential psychologic origin of the illness as was done by the use of the term "shell shock" in World War I. This truly need not be the case; although there is definitely a factor of fatigue in the production of these states, the exhaustion indeed is an emotional one which is dependent on the situation of living beyond one's psychologic means for long periods of time. Finally the weakened ego has lost the ability to suppress and repress the normal fear reactions. This control mechanism has played itself out. Physical factors play an accessory role but are definitely not the primary ones. At this phase the anxiety responses come in to overwhelm the tired ego and produce the classic syndrome. And so it is believed that there need be no confusion in an essentially dynamic conception of this syndrome because of its designation of operational fatigue.

These cases diagnosed "operational fatigue" after completion of the combat tour, plus the definite psychoneuroses which broke out during the prescribed duty tour, plus the group of acute anxiety states which occurred in normal men on account of the overwhelmingly severe or repeated traumatic experiences in combat, gave the Air Surgeon's Office serious problems of psychiatric care and management some months ago. In order to meet this problem effectively the Army Air Forces has organized a Personnel Distribution Command. The mission of this command is to examine properly, evaluate and care for overseas returnees, excepting the cases of injuries and physical illnesses. This command also supervises and operates the A. A. F.

Officers Replacement Pool and supervises and operates rest camps and convalescent hospitals and centers to which A. A. F. personnel are sent for definitive psychiatric care, convalescence and convalescent training, and subsequent reclassification and reassignment to military duty. It also conducts personnel functions and activities required to effect demobilization of military personnel of the A. A. F.

In order to effect this program, redistribution stations are organized to which overseas returnees are sent for a complete medical and psychiatric examination, so that the effect of the war on these men physically and emotionally is accurately determined. Adequate treatment for the restoration to reasonable health of those men who have been injured by the effects of war is promptly instituted. Discharge or retirement is recommended for those who are too sick to be quickly rehabilitated. For dispositional and treatment procedures, the emotional disorders are diagnosed as operational fatigue and classified as:

(*a*) Severe. Hospital centers are organized for the definitive psychiatric treatment of cases so diagnosed. These centers utilize all forms of definitive psychiatric care known to be valuable as aids in the recovery and rehabilitation of persons so suffering. These centers will also be used as teaching facilities, as outlined later.

(*b*) Moderate. Convalescent centers are organized for the care of moderate operational fatigue. Here the unwinding, retraining and rehabilitation of soldiers within the military setting are carried out. This program consists essentially of ego strengthening and supporting procedures rather than definitive psychiatric care. A mental hygiene unit is established at each post so utilized.

(*c*) Mild. These cases are not of clinical significance. It is felt that the return to duty in a new unit will be adequate to institute the recovery of these men.

The greatest current difficulty in the development of this program is the scarcity of competently trained psychiatric personnel. This handicap has been met by the institution of a comprehensive program of teaching by "training on the job" methods. All efforts should be focused on understanding the clinical and therapeutic angles of the types of psychoneurosis which are arising in the war and are being sent to the zone of the interior for evaluation and treatment. There are four essentials in the success of this program:

1. Organization of combined training-treatment centers as outlined, where the teaching program has available numbers of soldiers with reversible war neuroses. The handling of this clinical material is the basis of the training program.

2. Selection of competent physicians for this training. These men are selected from the group of doctors who are being returned from overseas assignments with fighting units and who, by their war experience, have acquired a definite intellectual hunger for further training and understanding of those problems they have encountered in their front line experience. They must have demonstrated their interest in these problems and certain fundamental capacities for understanding and caring for these types of illnesses. These men are readily selected in one interview by a psychiatrist with experience in teaching postgraduate psychiatry. According to the War Department policy of rotation, numbers of these men are now returning from overseas and will be available for such future training and assignments. These men so selected are sent to the combined training-teaching center, where, under the control of top notch clinical psychiatrists in both the therapeutic and teaching spheres, they receive a course of perhaps eight to ten weeks' intensive instruction in the diagnosis, theory and technics found most useful in the management of these special problems.

3. Assignment to these centers of carefully selected psychiatrists as therapists and teachers. These instructors must have had special training and developed competence for this particular field of psychiatric endeavor. This is doubly important, as these men must have had enough premilitary clinical psychiatric experience in the care and treatment of the psychoneuroses to reevaluate the old and organize new treatment procedures for this special type of psychiatric problem as current experience shows new technics to be of value. In this manner the most comprehensive and effective therapeutic regimen should be developed.

4. Supervision of these trainees after their assignment to duty as examiners in redistribution stations or as psychiatric assistants in treatment centers, which must be maintained by qualified and experienced psychiatrists. In this way their work will be more effective and a continued training program will be conducted as part of their daily routine.

There are numbers of well qualified psychiatric social workers and clinical psychologists available for utilization in this redistribution and rehabilitation program. These men, classified as Spec. numbers 263 and 289, should be made available readily to take their place in the organization of these centers. In these centers there must be adequate mental hygiene facilities and adequate classification units for proper job classification and placement. A competent Red Cross setup and adequate liaison with the United States Employment Service are essential to the program.

From this discussion it can be seen that the psychiatric program organized for the care of returned overseas soldiers depends essentially on our ability to select and train competent doctors with little or no previous psychiatric training to fulfil the need for junior psychiatric officers in this emergency. The proper selection and training of these men is both the keystone and the cornerstone of the whole program.

The Army Air Forces has found that men who have been overseas and have seen the acute anxiety reactions to battle experiences in statu nascendi have developed, in many cases, a powerfully keen desire for more knowledge, and further training in a field of medicine for which their earlier training had poorly prepared them. In one interview it is not a difficult matter to select the doctor who has responded in a positive way to those needs which arose in the heat of the battle situation and who intuitively devised his own technics and ways and means of meeting these situations effectively. With this powerful desire for knowledge and further training, such men have proved to be excellent material for training in psychiatry and take amazing advantage of educational opportunities presented to them. One is agreeably surprised when listening to the high quality of the discussions evoked from a clinical seminar group of these men who have been at work in a hospital as ward clerks with a few hours of lectures and seminars per day for a period of only a few weeks. Such experiences demonstrate that this group is the best available source from which to select those physicians most competent and capable of being trained for the duties essential to the success of the psychiatric program.

Following selection, the nature and type of the training to be given is the next most important consideration. These officers are to be trained on the job. They are brought into the treatment centers as ward assistants and their time, excepting for a few hours daily in lectures and clinical seminars, is spent in the care and treatment of sick people. The teaching program is directed essentially to the clinical aspects of dynamic psychiatry. What these men need to know are the clinical, diagnostic, theoretical and therapeutic aspects of psychoneuroses. In this emergency we must be willing to accept a competence limited to this special angle of psychiatry. We cannot hope to indoctrinate the men

with broader aspects of neurology and psychiatry. These men will have to take care of psychoneuroses which have arisen as a result of the acute stresses of the battle situation. The illnesses which they are called on to manage are essentially dependent on the terrific impact of the environmental stresses on their patients. An understanding of the conflicts so produced and the anxiety reactions to these conflicts, which are the basis of symptom formation, are the matters that these men need to know to be valuable to us in this acute situation. Although it may be desirable to have a knowledge of neuroanatomy, neurophysiology and pathology in the peacetime training of the competent psychiatrist, one must realize that in this crisis we cannot have comprehensively trained psychiatrists in adequate numbers. Such well trained men must be used in the program as teachers, supervisors and consultants to the younger men.

At this time all of our efforts for teaching and training the men who are needed so badly for this special task may well be directed to understanding the elements which are specifically the fundamental and essential ones in the creation of the types of illnesses under consideration. Experienced consultants in psychiatry, with a sound comprehensive training, should always be available to the students for problems which are unusual and for guidance and help in developing competence in meeting routine situations. The principles of training recommended here are ones which one does not like to accept in general postgraduate psychiatric training, but at this time the need for fairly competent men quickly trained for this special job is the all impelling motive. A specialist is seldom competent in his chosen field unless his knowledge rests on a sound base of broad clinical training and experience. That must always be so; but we are not trying to train specialists.

A note may be borrowed at this time from an important experience of the Army Air Forces earlier in the war. At that time literally tens of thousands of mechanics were needed to service the tremendous numbers of fighting planes in foreign theaters. This was indeed a colossal problem in view of the intricacies of these modern fighting monsters. Old time mechanics would wish at least three years to train an apprentice competently in such highly specialized work, but new "on the job" training technics were devised—new means of hewing closely to the line of the pure essentials needed for the completion of the task at hand. The thousands of planes which rise to the skies in all of our battle fronts throughout the world daily testify to the success of the conception and execution of this training program. The mechanics have met the requirements from that training. They keep the ships flying, and the combat crews keep the bombs dropping. This is a good example of the old adage that the "proof of the pudding is the eating." These men were trained in three months instead of three years.

At this time a leaf may be taken from the book of this experience. Mechanics are not doctors, but we may similarly outline, organize and streamline the teaching program to meet the basic essentials of what a doctor must know to handle these problems and give that knowledge to him directly in the daily routine treatment of the sick. In this way we may produce the necessary number of men sufficiently qualified to handle this problem; men with minimum training, to be sure, but collectively able to produce maximum results in this current emergency.

PSYCHOSOMATIC PROBLEMS

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In the best concept of the term, all human beings are psychosomatic problems. Every patient has both somatic and psychologic problems, excepting those that are dead when the doctor arrives. Draper [1] has stated "If we examine closely the structure of organismic unity which doctors nowadays seem to be striving so hard to preserve for the individual we may find perhaps that its division resides in a contemporary medical attitude and not within the animal at all." Patients in any service show varying degrees of emotional disturbance which alter the course of their illness, and these must be evaluated and treated if optimum conditions for recovery are desired.

Psychosomatic problems may be divided into (1) patients with symptoms referred to one of the body systems but without demonstrable evidence of somatic pathologic change and (2) patients with definite structural alterations thought to be at least in part due to psychologic disturbances.

The patients of the first type, that is, persons with somatic complaints but without observable organic lesions, may in turn be subdivided into two groups. The first of these subtypes is the so-called psychoneuroses, that is the ordinary hysterias, the obsessive ruminative states and the neurasthenias. These patients will usually have a long history of maladjustment, and their neurosis is on such a subtly conditioned basis that management by a skilled psychotherapist is necessary for satisfactory relief of symptoms.

The second subtype consists of the simple anxieties, in which the person responds normally to some immediate environmental situation but in such degree and for so long that changes in physiologic function occur and symptoms are produced.

In these patients reacting to immediate situations with anxiety, the extent and type of symptomatology will vary with the past history and the personality pattern of the individual who is subjected to the environmental stress. One thinks of the person of "coon dog temperament" as showing little response to situations that might cause his "fox terrier" brother untold misery in terms of cold sweats, diarrheas and lost sleep. It is probable, however, that every one has a threshold at which point objectified fears will express themselves as indefinite anxieties, pains and bodily complaints. Into this group fall many of the so-called war neuroses and many of the patients we see in the medical clinics and in the general hospital ward. These individuals, in situations of stress, show an exaggerated response in the autonomic sphere. Noting these sensations, they believe they are ill. Consultation with neighbors or review of the family's medical history often reveals persons suffering from heart disease, cancer or some other illness. The patient, fearing he is similarly afflicted, becomes increasingly concerned over his health; this adds to his burden of worry, increasing his symptoms and giving him more to worry about. We

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also see "Dr. Built" anxiety of a similar sort. Persons applying for insurance or routine physical examinations may be informed they have "leakage of the heart," anemia or some other condition. The doctor gives such information in his attempt to impress the patient with his skill and thoroughness or to assure himself of an alibi in case the patient falls dead of a coronary attack ten to twenty years later. The patient, having it on good medical authority that he is ill, may begin to dwell on his bodily function to the exclusion of most other interests. In the military setting we see persons subjected to new ways of living, prolonged strain, discomfort or danger developing severe anxiety symptoms with complaints referable to the various body systems. Patients in this group can and should be treated in the general medical clinics. They make up a large, unhappy and misunderstood group of patients who shop from clinic to hospital to the quacks and return. The management of such cases has been discussed elsewhere.[2]

The second large group of psychosomatic problems comprises those patients with symptoms similar to the anxiety patients but with definite structural lesions in which the psychogenic factors are felt to play an important etiologic role. Studies have been made on peptic ulcer, hypertension, coronary disease, bronchial asthma, mucous colitis and the arthritic disturbances, to mention a few. In considering these disorders two quotations are apt. Nolan Lewis[3] has stated "Those who neglect to take into account the psychological factors in disease should be reminded that psychological energy acts through physical structures and produces physical effects, as otherwise phenomena could not appear." And Dunbar[4] ". . . at least much too often an etiological relationship between the psychic problem and the illness has been assumed rather than demonstrated."

Many of the studies have been devoted to extensive investigations of the emotional growth and the vicissitudes of the patients suffering from various types of organ dysfunction and pathologic change. Most workers have exercised a laudable caution in ascribing a definite cause and effect relationship to their findings, yet the occurrence of typical psychodynamic configurations in certain types of disorder has led to the suspicion that these influences play an important if not the principal role in the production of the ailment. If this is true, how can psychologic conflicts produce structural alterations in the tissues? From a physiologic point of view the means must be by alterations in autonomic and endocrine functions secondary to psychologic disturbances. Anatomically this means alterations in the cortical and hypothalamic regions, as these areas appear to be the principal central regulators of autonomic function. The second question is Can alterations in autonomic physiology produce pathologic lesions in any organ system? This question may be most logically answered by considering the results of experimental attempts to reproduce certain pathologic lesions by first organic and second psychologic alterations in autonomic functions.

First I will consider ulcerative lesions of the upper gastrointestinal tract. Organic lesions of the central nervous system may produce ulceration of the mucosa of the upper gastrointestinal tract. This has been reported in human patients by Cushing.[5] Numerous animal experiments have shown that hypothalamic stimuli or injury frequently produces hemorrhage and erosion of the gastric mucosa. Keller, Hare and D'Amour[6] produced acute lesions of the gastrointestinal tract by producing intraventricular hemorrhage or by section of the brain at the level of the chiasm. They also produced gastric lesions by hypothalamic lesions in cats. Hoff and Sheehan[7] produced multiple hemorrhagic erosions of the mucosa of the stomach by lesions involving the tuberal area in monkeys. Keller and D'Amour[8] report similar findings in the dog and also show that the occurrence of hemorrhage into the mucosa was not prevented by section of the vagus fibers and that ulceration was not prevented if the sympathetic fibers were removed. Watts and Fulton[9] found that gastric and duodenal ulcerations in monkeys were produced by extensive hypothalamic damage. They explained these lesions as being principally due to ischemia of the mucosa brought about by the vasoconstrictor fibers. These reports have several points in common. Mucosal lesions were very rarely found in the control animals in any series. In the experimental groups the lesions occurred in some of the animals but not in all, even though the central lesion was the same in all animals of a given series. None of the authors offer an explanation for this difference in response to the experimental lesion, although it seems obvious that some factor present in some animals and absent in others, plus the central lesion, was necessary to produce the ulceration.

We thus have abundant evidence in experiments from nature and from the laboratory that central lesions can and do produce structural alterations in the gastrointestinal mucosa of some human beings and some animals. Having established that experimental interference with hypothalamic function is productive of gastrointestinal lesions, we may next consider what role the hypothalamics play in emotional adjustment and the organ participation in our daily living.

The material on this phase of the subject is voluminous. Miller[10] has summarized the literature, stating "It may be asserted that the hypothalamics regulate emotional as well as visceral and somatic manifestations, and all these are frequently concomitant. The conscious awareness that the individual is himself in the throes of emotion implies an activity on the part of the cortex." Miller, in commenting on the corticohypothalamic relationship, says that ". . . the cortex is to the subcortex as the fine adjustment on a microscope is to the coarse adjustment." Wittkower[11] has made a thorough survey of the literature and presents some original data on the influence of emotions on organ function, showing that physiologic processes of many sorts are altered by various emotional states. One of the most conclusive bits of evidence that emotional factors, by altering autonomic function, profoundly influence the development of gastrointestinal ulcerations

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is found in the studies of Wolf and Wolff.[12] In a patient with a gastric fistula they observed that emotions of anxiety and hostility produce hypermotility, hyperemia and small areas of hemorrhage in the gastric mucosa. They have demonstrated that these hemorrhagic areas ulcerate readily if exposed to gastric secretion. They have also shown that the small areas of hemorrhage, on exposure to acid secretions, produce more hyperemia and hypermotility. These observations are in keeping with observations that "many peptic ulcer patients show an exaggeratedly aggressive, ambitious and independent attitude. . . ."[13] Draper[14] has studied the incidence of peptic ulcer from several angles. Among many facts he has noted a predominance of aggressive trends, which were found most frequently in males. He also noted certain anthropologic peculiarities in ulcer patients which further emphasize the correlations between physique, psychologic experience and disease. The observations of Spicer and his co-workers[15] that perforation and hemorrhage from gastrointestinal ulceration increased significantly during the London blitz also suggests the role of emotional states in the cause and course of ulceration of the upper bowel.

Further experimentation similar to that of Wolf and Wolff are indicated. At present we can say that there is abundant evidence to show that autonomic dysfunction, whether organically or emotionally induced, can produce definite alterations in the function and structure of the gastrointestinal system. We have evidence that hostility and anxiety are the emotions productive of such changes and that such characteristics are the ones consistently found in human beings suffering from peptic ulcer as well as those with ulcer-like symptoms but no evidence of mucosal erosion. We also know that the relief of such emotional states favorably influences the course of peptic ulcer and relieves the ulcer-like symptoms of nonulcer patients. Thus the circumstantial evidence becomes rather convincing that ulcers are due to a specific type of emotional reaction in persons of certain constitutional and personality organization. To date we have not produced ulceration by experimentally induced emotional states, unless the German Air Force experiments[15] over London may be so interpreted.

Hypertension and heart disease are the greatest causes of disability and death in persons past 50 years of age. In our clinic these cases are next in frequency to those with gastrointestinal complaints. An abundant literature is accumulating on the subject, but nowhere do we find the complete answer to the cause or the treatment of this group of disorders. The fact that emotional states may produce profound temporary changes in pulse rate, fainting attacks, blushing and similar vascular phenomena has led to an investigation of the role of psychologic disturbance in the production of hypertensive cardiovascular disorders. Animal experiments have offered some interesting data. Fulton[16] has shown that faradic stimulation of areas 4 and 6 of the cortex of cats and monkeys will produce a sharp rise in systolic pressure. This effect is abolished by deep general anesthesia or by local anesthesia of the cortex and is reduced by splanchnic nerve section or by destruction of the stellate ganglion. There are many reports on the role of the hypothalamus in controlling the level of the blood pressure and in the production of experimental hypertension. The reports vary considerably but in general indicate that stimulation of certain portions of the hypothalamus will produce an increase in blood pressure. Miller[10] has made an excellent survey of the literature on this subject. Allen[17] has observed interesting differences, in the blood pressure response, to clamping the pedicle of explanted kidneys in dogs. He explains the differences in blood pressure response as being at least in part due to the personality differences or temperament types of the dogs. Thus animal experiments show that the central nervous system by means of the autonomic and hormonal system may influence the blood pressure level. It must be borne in mind, however, that none of these experiments produce in the animal conditions simulating essential hypertension or the cardiovascular syndromes of man and that essential hypertension has been produced experimentally by the Goldblatt preparations. On the other hand, hypertension has been relieved to some extent by the surgical removal of portions of the sympathetic nervous system in man, yet the same operation in Goldblatt's animals produces no lowering of the blood pressure.[18]

Many studies have been made of the psychologic functions in patients with cardiovascular disease. Wittkower[11] reports changes in the electrocardiogram and heart size due to strong emotional stimuli and makes an extensive review of the literature on the subject. Merritt[19] observed inversion of the T wave in the electrocardiogram of patients with "neurocirculatory asthenia." Weiss[20] considers the etiology of essential hypertension to be an interaction of endocrine, autonomic and psychic factors in persons of a particular constitutional pattern. Psychiatrists have made many detailed studies of patients suffering from the cardiovascular diseases and find that they present a distinct behavior pattern. These behavior traits have been very well described by Dunbar,[21] who has studied this phase of the problem extensively. Alexander[13] states that "the hypertensive individual seems to be continuously balanced between an intense nearly conscious but inhibited rage and equally intensive passive dependent wishes." It has been reported[21] that treatment directed toward solving the patient's emotional problems in the early phases of hypertension produces a good therapeutic result in many cases. In the late phases of the disorder the amount of relief of the distressing symptoms that may be produced by psychotherapy is approximately as great as that produced by surgical and drug therapy. In the case of the cardiovascular syndromes the evidence that emotional factors play a role in the etiology of these states is suggestive but by no means as definite as in the ulcer cases. In no case have we been able to produce essential hypertension or heart disease in animals or man deliberately by chronic psychologic stimuli.

The other psychosomatic problems could be considered in a similar manner, but the ones discussed serve as illustrations. We thus have two groups of psychosomatic problems: (1) patients without organic

12. Wolf, S., and Wolff, H. G.: Evidence on the Genesis of Peptic Ulcer in Man, J. A. M. A. **120:** 670 (Oct. 31) 1942.
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18. Goldblatt, H.; Kahn, J. R., and Lewis, H. A.: Studies in Essential Hypertension, J. A. M. A. **119:** 1192 (Aug. 8) 1942.
19. Merritt, W.: Inversion of the T Waves of the Electrocardiogram in 2 Patients with Neurocirculatory Asthenia, Ann. Int. Med. **20:** 773, 1944.
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lesions with symptoms due to maladaptation to their environment and (2) patients with organic lesions which may be in part due to maladaptation to their environment. It is possible that the two groups represent different methods of reaction to conflict by constitutionally different persons and not two distinct types of disorder. Much careful experimentation and detailed observation remain to be done.

CONCLUSION

Psychosomatic problems may be divided into two large groups:

I. Patients who react to emotional and environmental stress with bodily complaints and alterations in physiology but without alterations in body structure. These cases are (*a*) the psychoneuroses and (*b*) states of simple anxiety.

II. Patients with structural and functional alterations of pathologic proportion in which the emotional reaction to environmental stress appears to play an important role. These problems are still in the experimental phase, but it becomes increasingly evident that emotional factors play some role in all the illnesses of man, and these forces must be evaluated in any study of the cause and treatment of human sickness.

THYROTOXICOSIS TREATED WITH THIOURACIL

WILLIAM S. REVENO, M.D.

DETROIT

Interference with the production of thyroid hormone in animals, first by sulfaguanidine and later by other chemicals, notably thiourea and thiouracil, has been demonstrated by the Mackenzies and McCollum,[1] Richter and Clisby,[2] Kennedy [3] and Astwood and his co-workers.[4] Observations of this effect in human beings and its application in the treatment of hyperthyroidism were first made by Astwood,[5] who reported on the clinical use of both thiourea and thiouracil, and later by Williams and Bissell [6] and by Himsworth,[7] using thiouracil and thiourea respectively. All reported uniformly good results, but some adverse effects were noted also. Two thiouracil treated patients showed evidence of agranulocytosis,[8] while 2 more showed pitting edema with some evidence of renal involvement.[6] Both thiourea [5] and thiouracil [9] produced a skin rash in 5 patients. Mild jaundice was noted once.[10]

While the total reported number of treated patients has been small and the period of observation relatively brief, there has been close agreement by all observers that disappearance of toxic symptoms occurs coincidentally with a fall in the basal metabolic rate and a gain in body weight after a latent period of one to several weeks. When the chemical is discontinued all toxic signs return quite promptly. Little or no change takes place in the size of the thyroid, but there may be some softening of the gland. Iodine has no influence on the action of these drugs, but thyroid extract is directly antagonistic.

Experience in the treatment of 9 ambulatory patients with thiouracil [11] over a period of eight months is herewith detailed. All had toxic adenomas and 5 had been taking Lugol's solution immediately preceding treatment. All except 2 are still under observation.

REPORT OF CASES

CASE 1.—C. C., a man aged 40, had been under treatment for diabetes mellitus and hyperthyroidism since 1936. Adenoma of the right lobe, with nervousness, tremor, palpitation, weight loss and elevated basal metabolic rate were all present. Diabetes was difficult to control until Lugol's solution was started, when it became stabilized on 20-0-20 units of crystalline insulin daily. Nervousness and weight loss stopped, but the tremor, palpitation, elevated blood pressure and increased pulse pressure continued. The basal metabolic rate in March 1940 was plus 35 per cent, in May 1940 plus 16 per cent, in October 1941 plus 18 per cent and in October 1942 plus 11 per cent.

Lugol's solution was continued until Aug. 7, 1943, when thiouracil 0.8 Gm. daily was started and continued at this level until April 1, 1944, except for two interruptions of eleven and sixteen days each. As may be noted in chart 1, the basal metabolic rate did not fall in the expected manner during this entire period of observation, nor did it rise during the two intervals when the drug was stopped. The body weight and blood cholesterol levels also failed to show appreciable change. Only the tremor and moist palms showed improvement, and the systolic and pulse pressure levels were lower. The diabetes remained under control, and the thyroid gland was unchanged.

All evidence points to a poor response to the drug, and the most that can be said for the effect of thiouracil here is that it performed as well as and no better than Lugol's solution. The prolonged administration of iodine may have been responsible for the poor response, since it has been shown that there is delay of thiouracil action with previous iodine administration.[12]

CASE 2.—L. B., a man aged 64, was first seen in January 1943 because of weakness and exhaustion. There were warm moist palms with tremor, and a nodular bilateral thyroid enlargement, partly substernal. The blood pressure was 120/60 and the weight 169 pounds (77 Kg.). The basal metabolic rate was plus 24 per cent. There was prompt improvement with Lugol's solution, and in four weeks the basal metabolic rate was plus 6 per cent. This treatment was continued until March 31, 1943 and then stopped. The patient was not seen until August 23, when he again complained of a return of his former symptoms. Thiouracil was started on August 24. Chart 2 illustrates the prompt lowering of the basal metabolic rate and the gain in body weight that followed in four weeks. A three weeks interruption in administration of the drug between December 15 and January 10 resulted in a rise of 22 per cent in the basal metabolic rate but an increase in the blood cholesterol level. The figures for this determination are apparently not in accord with the rest of the data and their significance must accordingly be discounted.

The patient continues at his daily work symptom free on 0.4 Gm. of thiouracil daily. The thyroid gland is somewhat larger but softer than it was in the beginning.

From the Departments of Medicine, Harper Hospital and Wayne University College of Medicine.

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2. Richter, C. P., and Clisby, K. H.: Graying of Hair Produced by Ingestion of Phenylthiocarbamide, Proc. Soc. Exper. Biol. & Med. **48:** 684-687 (Dec.) 1941; Toxic Effects of Bitter Tasting Phenylthiocarbamide, Arch. Path. **33:** 46-57 (Jan.) 1942.
3. Kennedy, T. H.: Thioureas as Goitrogenic Substances, Nature, London **150:** 223-234 (Aug. 22) 1942.
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5. Astwood, E. B.: Treatment of Hyperthyroidism with Thiourea and Thiouracil, J. A. M. A. **122:** 78-81 (May 8) 1943.
6. Williams, R. H., and Bissell, G. W.: Thiouracil in the Treatment of Thyrotoxicosis, New England J. Med. **229:** 97-108 (July 15) 1943.
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10. Sloan, Margaret H., and Shorr, E.: Metabolic Effects of Thiouracil in Graves' Disease, Science **99:** 305-307 (April 14) 1944.
11. The thiouracil was supplied by Dr. B. W. Carey of the Lederle Laboratories, Inc., Pearl River, N. Y.
12. Rawson, R. W.; Evans, R. D.; Means, J. H.; Peacock, W. C.; Lerman, J., and Cotrell, R. E.: The Action of Thiouracil upon the Thyroid Gland in Graves' Disease, J. Clin. Endocrinol. **41:** 1 (Jan.) 1944.

CASE 3.—Mrs. R. W., aged 45, had enlargement of the thyroid gland for the past twenty years. She was seen irregularly during this time but presented no evidence of thyrotoxicosis until seven years before I saw her, when she showed a basal metabolic rate of plus 22 per cent. In April 1942 the rate was plus 12 per cent, and a circumscribed firm nodule

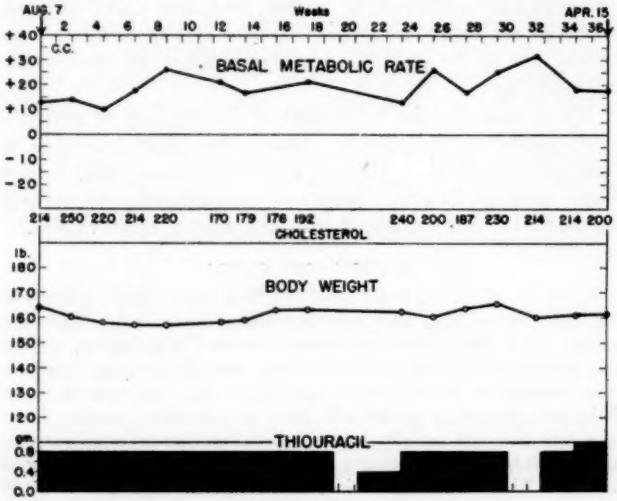

Chart 1.—Course with thiouracil in case 1.

was palpated in the right lobe of a uniformly enlarged cystic thyroid gland. Sept. 3, 1943 she first sought help for nervousness, palpitation and tremor, which had appeared three months before along with irregularity in menstruation. Again the thyroid gland showed a bilateral cystic enlargement with a firm nodule in the right lobe. The skin was flushed, there was a fine tremor of the hands and she was obviously restless and disturbed.

Thiouracil was started on September 11, the initial dosage being 0.8 Gm. per day. This was reduced to 0.6 Gm. daily after nineteen days because of epigastric discomfort and pain. As improvement set in and the basal metabolic rate dropped to minus 3 per cent (chart 3) the dosage was further reduced

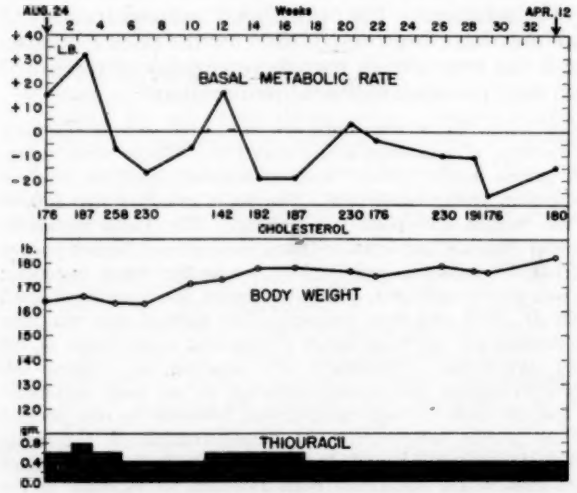

Chart 2.—Course with thiouracil in case 2.

to 0.4 Gm. daily; but, with a rise in the basal metabolic rate during the next four weeks, 0.6 Gm. was again given daily. She continued symptom free, with little change in the thyroid gland, until March 1, when she noticed an increase in the size of her goiter associated with a choking feeling. This change became more evident during the following four weeks, and the nervousness and tremor returned. No thiouracil was taken for nine days previous to reexamination on March 29. At this time both lobes of the thyroid showed increase in size, the right more than the left, and there was compression of the trachea with displacement toward the left. Nervousness and palpitation had returned, and the basal metabolic rate was now plus 21 per cent.

Lugol's solution was given and thyroidectomy was performed by Dr. Clark D. Brooks on April 6, 1944. Recovery was uneventful. Examination of the specimen by Dr. Plinn F. Morse disclosed an irregular, lobulated mass of thyroid tissue weighing about 150 Gm., on the external surface of which were many pedunculated nodules hanging from the capsule in a grapelike manner. These nodules were of varying size, some reaching 2 cm. in diameter. On section, many areas of recent hemorrhage and brownish spots due to older hemorrhage were found throughout the structure of the gland. Microscopically the structure was that of a colloid adenoma with large, overfilled, thin walled follicles lined with very flat and compressed epithelium. There were no areas of hyperplasia. In addition to the old and new hemorrhages there were areas of necrosis with beginning organization. No malignant condition was present.

Failure to find hyperplasia, the expected change resulting from thiouracil administration, can be explained only by the fact that no thiouracil had been

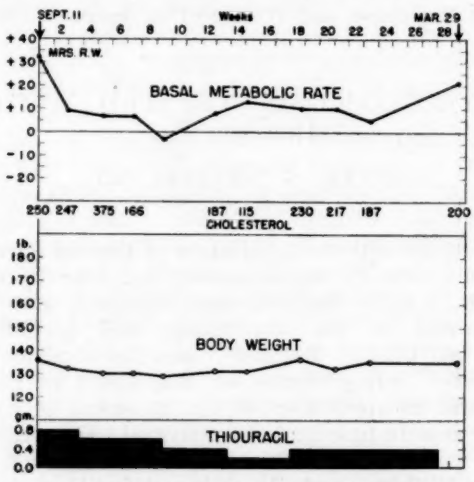

Chart 3.—Course with thiouracil in case 3.

taken for seventeen days previous to operation, while iodine had been given for six days preoperatively. The interval for the disappearance of thiouracil hyperplasia does seem short, but it may have been made so by the iodine. The latter effect deserves consideration in view of the established observation that iodine has no influence on the change induced by thiouracil.[1] Astwood[5] reports that a patient with a large nodular thyroid and a metabolic rate of plus 20 to plus 30 per cent failed to respond to thiouracil. Carcinoma of the thyroid was found, while the remainder of the gland was composed of colloid filled alveoli with uniformly flat epithelium. A certain degree of similarity to the findings just reported may be noted, but the parallelism ends abruptly since our patient showed no evidence of cancer and, for a time at least, responded to the treatment.

Of important significance is the finding of old and new hemorrhage and areas of necrosis in the gland; and while these may have occurred for other reasons, they may also have been caused by thiouracil.

CASE 4.—Miss E. R., aged 76, when first seen in August 1941 was suffering from nervousness, tremor, palpitation, weight loss and ankle edema. There was hypertension (190/80), a hard nodule in the left lobe of the thyroid, auricular fibrillation, tremor and warm moist palms. The basal metabolic rate was

plus 21 per cent. The nervousness and palpitation improved and she gained weight while taking Lugol's solution and digitalis, but she continued to fibrillate, had edema of the lower extremities, and the metabolic rate continued between plus 17 and 35 per cent.

Lugol's solution was stopped Sept. 3, 1943 and thiouracil 0.8 Gm. per day was started September 15. Digitalis was continued. In spite of a reduction in dosage to 0.6 Gm. per day after the first two weeks, improvement proceeded without interruption (chart 4). Digitalis was discontinued after eight weeks and the thiouracil reduced to 0.4 Gm. per day. All evidence of hyperthyroidism has disappeared and there has been no reactivation in spite of two attacks of acute upper respiratory infection. There is no fibrillation and no ankle edema. The thyroid gland is slightly larger but somewhat softer than at first.

This represents a highly satisfactory result obtained in a patient with severe thyrocardiac involvement.

CASE 5.—Mrs. B. C., aged 62, was seen in May 1943 because of dizziness, blurring of vision and exhaustion. There was tremor, moist warm palms, and a palpable adenoma in the right lobe of the thyroid. The basal metabolic rate was plus 38 per cent and the blood cholesterol 150 mg. per hundred cubic centimeters. Some improvement followed administration

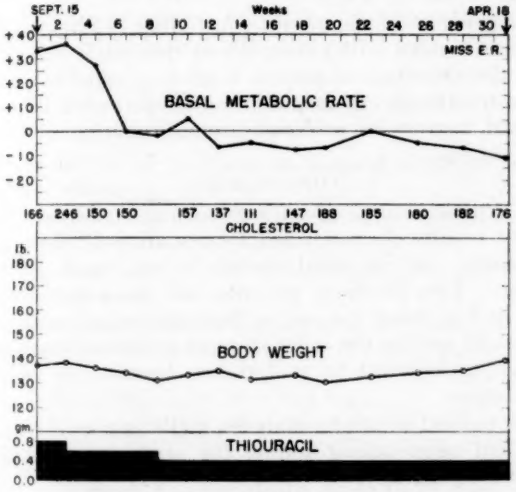

Chart 4.—Course with thiouracil in case 4.

of Lugol's solution for a period of four and one-half months. The tremor, exhaustion and elevated metabolic rate continued. The thyroid adenoma remained unchanged.

Thiouracil was started October 1. After ten days the patient developed nausea, chills and fever; the drug was stopped for two days and then reduced from 0.8 to 0.6 Gm. per day. This dose was continued for eight weeks, then increased to 0.8 Gm. per day. There was no ill effect, and a lowering of the basal metabolic rate together with a general improvement followed within two weeks and has continued since then (chart 5). The thyroid adenoma was unchanged except that it felt slightly softer.

CASE 6.—Mrs. G. P., aged 50, complained of being tired, short of breath, and unable to lie down for any length of time. There was an annoying persistent cough, a smothering sensation, palpitation and nervousness. This disturbance had been present for several months previous to January 1943, when she was first seen. Her weight was 191 pounds (87 Kg.), the blood pressure 150/90, the heart enlarged to the left with a systolic murmur at the apex and fibrillation with a pulse deficit of 28. Moist rales were noted at the lung bases, and there was edema of both lower extremities. There was an adenoma of the right thyroid lobe, and the basal metabolic rate was plus 24 per cent with a blood cholesterol level of 136 mg. per hundred cubic centimeters. She improved while taking Lugol's solution and digitalis and following a reduction diet but tired of this regimen after three months and stopped all medication. In June her weight was down to 167 pounds (76 Kg.), all her previous symptoms had returned, and again there was a pulse deficit with the auricular fibrillation. Lugol's solution and digitalis were prescribed but not taken. She returned in November in much the same condition and this time was started on digitalis and 0.6 Gm. of thiouracil per day.

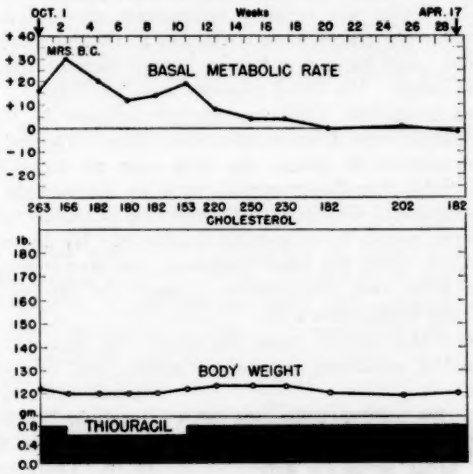

Chart 5.—Course with thiouracil in case 5.

The response was both prompt and satisfactory subjectively and objectively (chart 6). The pulse deficit had disappeared and the digitalis was discontinued five weeks after the beginning of treatment. From about the eighth week on however the patient showed evidence of failure to follow the treatment, and the subsequent observations are accordingly of little value.

CASE 7.—A. S., a man aged 67, appeared in November 1943 complaining of epigastric discomfort caused by reactivation of a duodenal ulcer. Attacks had occurred several times in the past two years. In addition to the evidence of duodenal ulcer, both lobes of the thyroid were palpable, with a small adenoma in the right lobe, and there was a tremor of the hands, with warm moist palms. The basal metabolic rate was plus 9 per cent. Thiouracil 0.6 Gm. per day was started November 22 and continued to the present except for two intervals, one

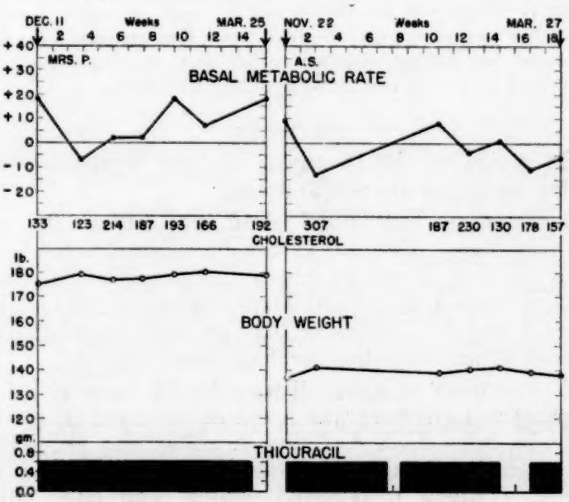

Chart 6.—Course with thiouracil in case 6.

of one week when he developed an acute upper respiratory infection and one of two weeks when he developed recurrence of severe epigastric pain.

While the response in this patient has been quite satisfactory the reactivation of ulcer symptoms while taking the thiouracil may have resulted either from

local irritation or from pituitary stimulation by the drug. Whichever is true, care certainly should be exercised in the administration of thiouracil to patients with peptic ulcer.

CASE 8.—Mrs. E. L., aged 82, complained of choking and tightening of the throat, dry cough, nervousness, insomnia and hypertension of long standing when she first appeared in January 1944. There was nodular enlargement of both lobes of the thyroid. The palms were warm and moist and there was a fine tremor. Lid lag and a definite "stare" were present. The pulse was rapid. The blood pressure was 220/120.

Thiouracil 0.6 Gm. daily was started January 24, before a basal metabolic rate determination was made. The only difficulty encountered in taking the drug was an initial gastric distress. Subjective improvement, such as decrease in cough and constriction of the throat, with lessening of tremor appeared within three weeks after starting treatment. By the time of the last visit, when the basal metabolic rate was minus 3 per cent, the pulse rate, nervousness, tremor and eye signs had subsided manifestly (chart 7).

CASE 9.—Mrs. S. A., aged 58, when seen Aug. 17, 1943, complained of weakness, palpitation, tremor and profuse perspiration of two years' duration. She had had a goiter since the age of 18. There was enlargement of the right thyroid lobe, the skin was moist and flushed and the blood pressure was 144/90. There was no tachycardia. Thiouracil 0.6 Gm. was given daily but caused gastric distress almost immediately. This was overcome by taking the tablets just before meals. Improvement was noted by the patient after two weeks, but the basal metabolic rate showed no reduction by the end of eight weeks. The patient has not appeared for further observation, so that no conclusion can be drawn as to the effectiveness of the treatment.

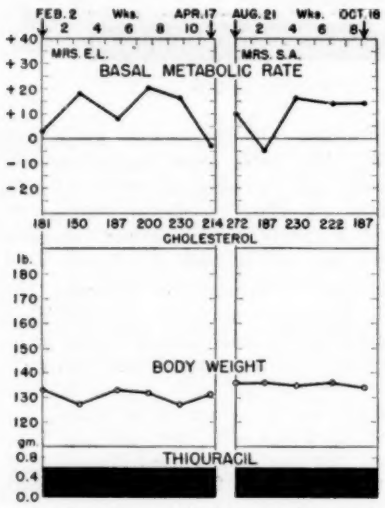

Chart 7.—Course with thiouracil in case 8.

COMMENT

In reviewing the treatment of these 9 patients the following points are worth noting:

1. *Dosage.*—The initial dose was either 0.6 or 0.8 Gm. daily. This was eventually reduced to 0.4 Gm. daily in cases 2 and 4; it was maintained at 0.6 Gm. daily in cases 3, 6, 7, 8 and 9 and was kept at 0.8 Gm. in cases 1 and 5. Tablets of 0.2 Gm. each were administered either two, three or four times daily.

2. *Reactions.*—Gastric distress in the form of pain, burning and gnawing was noted at the onset of treatment in cases 2, 3, 7, 8 and 9. This was promptly controlled by the taking of food along with the medication. Patient 6 reported nausea with chills and fever ten days after starting treatment. This lasted two days, during which the drug was stopped. No further reaction followed resumption of treatment. Opportunity for determining whether agranulocytosis had occurred was not available, since the patient was out of the city at the time of the reaction.

No instances of urticarial or toxic skin rash, agranulocytosis, anemia, edema or jaundice occurred.

The rapid enlargement of the thyroid in case 3, with increase in toxicity and evidence of recent and old hemorrhage in the gland, deserves mention as a possible effect of the drug.

3. *Elapsed Time Before Improvement.*—Excepting for case 1, in which no noteworthy effect resulted, the latent interval was two weeks in cases 6, 7 and 9, four weeks in case 2, six weeks in case 4, eight weeks in case 3, ten weeks in case 8 and fourteen weeks in case 5. The long interval in the last instance was undoubtedly due to too low a dosage of thiouracil.

4. *Changes in the Thyroid.*—No significant change was noted in the appearance of the gland except a slight softening in every case except in case 3, in which rapid enlargement developed.

5. *Blood Cholesterol Levels.*—No reliance could be placed on the results of these determinations, since the figures failed to rise or fall with decrease or increase, respectively, in basal metabolic rate determinations. Perhaps this is due to the fact that all patients in this series had toxic adenomas, a condition in which the inverse relationship between cholesterol level and basal metabolic rate is not as distinct as it is in toxic diffuse goiter.

6. *Previous Medication with Iodine.*—Five patients had been treated with iodine before thiouracil was given. With the exception of patient 1, all responded favorably to the treatment. It is possible that patient 1 failed to respond because of prolonged administration of iodine (six years).

CONCLUSIONS

Of 9 patients treated with thiouracil, 6 showed satisfactory results characterized by cessation of disturbing symptoms, fall in basal metabolic rate and gain in weight. Two of these patients had auricular fibrillation; in 1 of these the use of digitalis was discontinued after eight weeks; the other showed promise of improvement, which failed to materialize because of lack of cooperation.

One patient in whom diabetes mellitus coexisted, and who had been taking iodine for six years, failed to respond to therapy.

Another patient responded favorably at first but developed rapid enlargement of and hemorrhage into the gland and was subjected to surgery.

The third failure was of a patient who, while showing some clinical improvement, failed to show a drop in basal metabolic rate during the short period she was under observation.

The results in the responsive patients appeared as good as those following successful thyroidectomy.

968 Fisher Building.

Most Eminent Authority on Surgery During the Middle Ages.—Guy de Chauliac (1300-1368) was the most eminent authority on surgery during the Middle Ages. His Chirurgia magna was written in 1363. Born in the countryside near Auvergne in France, he took holy orders and was educated in medicine at Toulouse, Montpellier and Paris, with a special course in anatomy at Bologna. He settled in Avignon and was surgeon to the French popes. He operated for hernia and cataract but hesitated to cut for the stone. He employed the cautery for cancer. He treated ulcers by investing them with a collar of steel. His discussion of fractures and dislocations is good. He used Theodoric's narcotic or soporific inhalant as an anesthetic. He did not believe in the power of nature in healing wounds, but in the surgeon's intervention with salves, plasters, etc.—Clendening, Logan: Source Book of Medical History, New York, Paul B. Hoeber, Inc., 1942.

THE TREATMENT OF SULFONAMIDE RESISTANT GONORRHEA WITH PENICILLIN SODIUM

RESULTS IN 1,686 CASES

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In May 1943, soon after preliminary evidence of the effectiveness of penicillin in the treatment of gonorrhea was obtained by Mahoney and his co-workers [1] and Herrell, Cook and Thompson,[2] studies were inaugurated by the Surgeon General's Office of the U. S. Army with a view to determining as rapidly as possible time-dosage factors in the penicillin treatment of this disease. The clinical trials were carried out in fifteen selected army hospitals. Altogether, 1,686 patients with sulfonamide resistant gonorrhea were studied.

METHOD OF STUDY

The hospitals participating in the study and the responsible investigators in each are shown in table 1. Similar requirements as to the selection of patients, methods of treatment and criteria of cure obtained in each.

Selection of Patients.—Patients admitted to the study were limited to those fulfilling the following conditions:

1. A clear history of gonorrhea acquired within the past few weeks or months.

2. Typical clinical signs and symptoms of gonorrhea at the time penicillin treatment was begun.

3. Smear and culture positive for gonococci immediately prior to penicillin therapy.

4. Sulfonamide resistant gonorrhea as determined by failure to respond to two or more courses of sulfathiazole or sulfadiazine, each course consisting of at least 20 Gm. of drug administered within a period of five days.

Plan of Treatment.—No patient was started on penicillin treatment until at least five days after the discontinuance of other medications, including sulfonamides. Solutions of penicillin in sterile saline solution or distilled water were prepared daily from the dried powder and were refrigerated at approximately 4 C. when not in use. The individual dose in all cases was either 10,000 or 20,000 Oxford units injected intramuscularly at intervals of three hours, day and night.

As originally projected this study called for the treatment of four groups of patients employing respectively a total dosage of 40,000, 80,000, 120,000 and 160,000 Oxford units, with each group further divided according to whether the individual dose was 10,000 or 20,000 units. The interval of three hours between doses remained constant for all groups.

Later, when it was apparent that favorable results were being obtained with all dosage schedules, two new groups were added, one employing a total dosage of 50,000 units and another employing 100,000. The latter dosage levels were selected largely because of convenience, arising from the fact that the drug was commonly delivered in ampules containing 100,000 units.

It should be emphasized that no other medication and no local treatment whatever were given concurrently with penicillin or during the observation period.

Criteria of Cure.—Patients included in this study were routinely retained in the hospital for at least twenty-one days following the completion of penicillin therapy. During this period the following examinations were performed:

1. Daily examination for evidence of urethral discharge.

2. Daily two glass urine examination.

3. Cultures and smears for gonococci within forty-eight hours after the completion of treatment, and on the seventh, fourteenth and twenty-first days. These bacteriologic studies were made on material obtained from the urethra as long as such material was available. If no urethral discharge was present, cultures and smears were made on prostatic secretion expressed through prostatic massage. The prostatic secretion was examined either directly or after collection in urinary sediment.

TABLE 1.—*Hospitals and Investigators Participating in Clinical Trials*

Hospital	Investigators
Camp Howze	Major G. A. Campbell, Capt. S. Bar
Barnes	Capt. L. A. Gebris, Capt. M. Giffords
Brooke	Col. J. C. Woodland, Capt. F. Geiger
Fort Dix	Major S. L. Raines, Capt. G. S. Barrett
Percy Jones	Capt. L. W. Holladay, Capt. A. W. Frisch
Fitzsimons	Lieut. Col. R. L. Smith, Major D. P. Greenlee
Fort Bragg	Major G. Campbell, Capt. M. Bolus
Lawson	Lieut. Col. E. C. Lowry, Capt. L. W. Hewit
Army and Navy	Lieut. Col. I. S. Wright, Major A. W. Pinkerton
Billings	Major E. H. Burford
Oliver	Major S. T. Flynn, Major J. M. Flood
O'Reilly	Lieut. Col. A. I. Josey, Capt. F. E. Kirshman
Walter Reed	Capt. R. J. Murphy
Lovell	Major V. S. Dick, Capt. R. A. Snyder
Fort Benning	Major C. G. Stillinger, Major R. F. Kelsey

Patients were termed "cured" and released from the hospital if they were asymptomatic and bacteriologically negative on the twenty-first day after completion of treatment. As indicated later, the vast majority of patients became clinically and bacteriologically negative within the first week. "Failure" was determined by the presence of positive smears or cultures on the seventh post-treatment day or at any time thereafter, even though the patient had no urethral discharge. Because of the wide geographic dispersal of patients on release from the hospital, no attempt was made to obtain follow-up examinations beyond the period of hospitalization.

MATERIAL STUDIED

A total of 1,686 patients with sulfonamide resistant gonorrhea were included in the study. All were men between the ages of 18 and 38 years, the mean age being 23. The average duration of infection was fifty-one days. The average amount of sulfonamide drug received prior to penicillin therapy was 58 Gm. Most of the patients included in the study had received some form of local treatment subsequent to sulfonamide therapy. In addition, 236 patients had been treated unsuccessfully with hyperpyrexia, induced either mechanically or by means of typhoid vaccine.

From the Venereal Disease Control Division, Preventive Medicine Service, Office of the Surgeon General, U. S. Army.

Read before the Section on Practice of Medicine at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Mahoney, J. F.; Ferguson, C.; Buchholtz, M., and Van Slyke, C. J.: The Use of Penicillin Sodium in the Treatment of Sulfonamide Resistant Gonorrhea in Men, Am. J. Syph., Gonor. & Ven. Dis. **27**: 525, 1943.

2. Herrell, W. E.; Cook, E. N., and Thompson, L.: Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections, J. A. M. A. **122**: 289 (May 29) 1943.

RESULT OF TREATMENT

Results According to Total Dose.—In table 2 are shown the results of treatment with one course of penicillin, according to the total dose administered. It is evident that remarkably satisfactory results were obtained with all dosage schedules employed. In the first series of patients treated no important differences in the final result were noted among the groups treated with 40,000, 80,000, 120,000 and 160,000 units respectively.

TABLE 2.—*Results of Treatment According to Dose of Penicillin (One Course Only)*

Total Dose Penicillin	Number Treated	Failures	Per Cent Cured
160,000	144	3	97.9
120,000	191	9	95.3
80,000	225	10	95.6
40,000	137	12	91.2
100,000	433	15	96.5
50,000	556	77	86.2
Total	1,686	126	92.5

When larger series were compared employing a total dose of 100,000 units for the one and 50,000 for the other, the results were significantly poorer with the smaller dose.

It should be pointed out that the dosage schedules used are only approximate, since at the time of these studies potency assays were crude and subject to as much as 25 per cent error in either direction in some instances. Furthermore, batches of the drug were shipped to the various hospitals all over the country and it is believed that in some instances, at least, conditions of shipment such as exposure to excessive heat may have resulted in a loss of potency. It was definitely noted that in certain hospitals using particular lots of penicillin the results were inferior to those of groups treated with the same dosage schedule elsewhere. This was particularly noticeable in the 50,000 unit group, since here the dosage was probably on the borderline of effectiveness and any loss of potency became evident by an appreciable increase in the percentage of failures. In two hospitals certain lots of the drug resulted in a 50 per cent failure rate at the 50,000 unit schedule of treatment. In the same hospitals using the same dosage schedule but with penicillin of different manufacture, the results were similar to those obtained elsewhere. On the other hand, the 91 per cent cure rate obtained in the 137 cases treated with 40,000 units of penicillin may have been due to the use of underassayed drug.

Effect of Size of Individual Dose.—No significant differences in the final results were noted when a given total dose was administered in individual injections of 10,000 or 20,000 units. For example, employing a total dose of 100,000 units, of 261 patients treated with five injections of 20,000 units each, favorable results were obtained in 96.6 per cent, while of 172 patients treated with 10 doses of 10,000 each, exactly the same percentage responded favorably (table 3).

These observations are of very practical importance from a military and probably a civilian standpoint. When the total amount of drug is administered in five doses at three hour intervals treatment is accomplished within a total period of twelve hours, while with ten doses at the same interval treatment must extend without interruption through the night. In situations in which hospitals are understaffed or blackout precautions must be observed, it is advantageous to complete treatment during the daylight hours and largely during the normal working day.

Response to Treatment in General.—The response to treatment was ordinarily dramatic, with prompt disappearance of symptoms and reversal of cultures and smears to negative. The average time for the urethral discharge to disappear or change from purulent to mucoid was two days, although in the majority of cases both objective and subjective improvement was noted within a few hours after the beginning of treatment.

In patients responding to treatment, cultures were almost invariably negative within forty-eight hours, although smears taken within this period occasionally showed degenerated coccoid organisms. Smears of this type were rarely noted after forty-eight hours.

In roughly 20 per cent of the patients a slight intermittent mucoid discharge persisted from one to three weeks, gradually resolving over this period. At first it was thought that this indicated failure of therapy; however, since careful study commonly failed to reveal the presence of gonococci and this slight discharge eventually ceased spontaneously, it is now regarded as a normal finding incidental to the healing process.

Analysis of Failures.—Of the 1,686 patients treated, 126 failed to respond to one course of penicillin. Of these failures 84 became manifest by the end of the first treatment week, 31 during the second and 11 during the third. For the most part the 84 failures during the first post-treatment week were those patients receiving the lower total dosages of penicillin. In these cases the clinical response was not conspicuous. Moreover, while twenty-four to forty-eight hour cultures were usually negative, possibly because of the presence of excreted penicillin, the smears frequently remained positive and cultures became positive within a few days thereafter. The majority of the 31 failures which became manifest during the second post-treatment week responded temporarily to treatment and then relapsed both clinically and bacteriologically. Of the 11 failures appearing in the third post-treatment week, 6 were completely asymptomatic and were judged failures on the basis of bacteriologic evidence. Since these 6 patients were promptly and successfully retreated with penicillin, it is not known whether spontaneous bacteriologic cure would have resulted without the second course of penicillin.

TABLE 3.—*Results of Treatment (Effects of Size of Individual Dose and Length of Treatment)*

Total Dose	Size of Individual Dose	Length of Treatment, Hours	Number Treated	Number of Failures	Per Cent Cured
120,000	20,000	15	105	3	97.1
100,000	20,000	12	261	9	96.6
80,000	20,000	9	124	8	93.6
Total			490	20	95.9
120,000	10,000	33	86	6	93.0
100,000	10,000	27	172	6	96.5
80,000	10,000	21	101	2	98.0
Total			359	14	96.1

Influence of Duration of Infection.—In 1,154 patients of this series the onset of gonorrhea was less than sixty days prior to the initiation of penicillin therapy, and in 532 infection had been present for longer than sixty days. A successful outcome was observed in 92 per cent of the one group and in 93 per cent of the other, indicating that duration of infection is not an influential factor in determining the response to penicillin therapy.

Influence of Previous Fever Therapy.—In addition to at least two courses of sulfonamides, 236 patients had been subjected to artificially induced hyperpyrexia for sulfonamide resistant gonorrhea. Of these 92.2 per cent responded to one course of penicillin, as compared with a response rate of 92.7 per cent for those who had not had previous fever therapy.

Influence of Race.—Of 139 Negro patients in the entire series of 1,686, 125, or 90 per cent, responded favorably to one course of penicillin, as compared with a favorable response of 92.8 per cent in the white group. This small difference in the results in the two groups is not considered significant.

Response of Patients with Complications.—In general it can be said that the complications of gonorrhea responded well to treatment with penicillin. In most instances improvement began shortly after the penicillin was administered and continued until the patient was well. Of 47 patients with acute epididymitis at the time penicillin therapy was initiated, 43 responded to one course and 4 required a second course. Of 14 patients with severe acute prostatitis 13 responded immediately, while the additional case responded to a second course of penicillin.

Included in this series of patients were 9 who had mild to moderately severe articular involvement associated with a persistent gonococcic urethritis. Presumably the joint lesions were gonococcic in origin. Of these 9 cases 3 responded to one course of penicillin and 2 to an additional course. In 4 cases there was no substantial improvement to two courses of penicillin, although the coexisting urethritis responded satisfactorily.

Not included in this series are 5 patients with sulfonamide resistant gonorrhea and severe acute arthritis, presumably gonococcic in origin, who, because of the severity of the disease, were given considerably larger doses of penicillin. The results were excellent in each case. Among the complications of gonorrhea observed was 1 case of gonococcic conjunctivitis, proved by culture, which responded to 160,000 units, and a case of keratoderma blennorrhagicum, which responded to 120,000 units.

Retreatment of Failures.—Of the total of 126 failures to one course of penicillin 85 were retreated, a total dose of 100,000 units being used in each. Of these, 78, or 91.8 per cent, were cured. In 4 of the 7 cases which failed to respond, a third course of 100,000 units of penicillin was given, with a satisfactory outcome in all. No true instance of penicillin resistance was observed.

Reactions to Treatment.—No serious reaction to penicillin treatment was observed. In 98 patients soreness at the site of injection was noted, but 42 of these patients were in a group of 50 who were treated with one lot of the drug. Other reactions listed were mild fever in 7, slight nausea in 5, headache in 4, chilliness in 4 and dizziness in 3. However, since the conditions of the study required that all untoward signs or symptoms occurring during or immediately after penicillin treatment be recorded, it is probable that in many instances the symptoms noted were coincidental and not true reactions to the drug.

COMMENT

It is evident from the foregoing results that penicillin is remarkably effective in the treatment of gonorrhea. Doses totaling more than 80,000 to 100,000 units appear to offer little advantage over these amounts, and, indeed, the results obtained with 40,000 and 50,000 units are sufficiently good to warrant the use of these total doses when supplies of the drug are limited.

It is quite possible that somewhat better results might be obtained by varying the time-dosage relationship. Perhaps a two hour interval between doses would be more effective than the three hour interval employed in these studies. Likewise, larger initial doses followed by smaller doses might offer advantages over the schemes described here, but these variations appear to be questions of detail rather than ones of major importance.

In this series of cases, penicillin was administered by the intramuscular route, which on the basis of studies by Rammelkamp and Keefer [3] appears to be superior for this purpose to intravenous administration. The practical advantages of intramuscular over intravenous administration are obvious. In order further to simplify the mechanics of treatment a practicable method of prolonging absorption and excretion of penicillin is needed. In this connection experiments are now in progress employing penicillin incorporated in oil vehicles in the hope that satisfactory results may be obtained by the administration of one or two large doses of penicillin.

While at the very onset of these studies it was evident that penicillin was greatly superior to the sulfonamides in the treatment of gonorrhea, it was nevertheless expected that a proportion of cases treated would prove to be resistant. This expectation of penicillin resistance failed to materialize, since all patients in this series subjected to three courses of treatment responded favorably. Furthermore, of the many thousands of soldiers treated for gonorrhea with penicillin during the past six months, instances of penicillin resistance have been extremely rare. The recent report of Cohn and Seijo [4] tends to confirm this observation, since in their in vitro experiments penicillin concentrations of 1 to 10,000 killed all gonococcus strains tested.

The ability of the gonococcus to develop resistance to penicillin through initial exposure to small concentrations of the drug is still undetermined. The evidence afforded by this series indicates that this happens rarely, if at all, since 92 per cent of failures to the first course of treatment responded to a second course. Furthermore, of the 77 cases which failed following initial therapy with the small first course of 50,000 units of penicillin, 57 were retreated with a 100,000 unit schedule, of which 52, or 91.2 per cent, responded favorably. Of the 5 failures to the second course, 3 were given a third course of similar dosage, with satisfactory results in all.

The possibility of penicillin treatment of gonorrhea masking or delaying the appearance of manifestations

3. Rammelkamp, C. H., and Keefer, C. S.: The Absorption, Excretion and Distribution of Penicillin, J. Clin. Investigation **22**: 425, 1943.
4. Cohn, A., and Seijo, I. H.: The In Vitro Effect of Penicillin on Sulfonamide Resistant and Sulfonamide Susceptible Strains of Gonococci, J. A. M. A. **124**: 1125 (April 15) 1944.

of early syphilis must be borne in mind. While most of the patients in this series were beyond the incubation period of primary syphilis, several cases were observed in which it is possible that penicillin affected the development of early syphilis. The most definite instance was that of a patient with a small ulcer at the frenum, to whom 100,000 units of penicillin was administered before the lesion was studied by dark field examination. The dark field examination was negative the day following and the lesion healed rapidly. Six weeks later a typical dark field positive chancre appeared in the same location. The patient denied further sexual exposure. Because of the known effect of penicillin on Treponema pallidum, patients receiving penicillin therapy for gonorrhea should be observed clinically and serologically for evidence of syphilis for a period of at least three months.

SUMMARY AND CONCLUSIONS

Studies have been carried out in fifteen selected army hospitals with a view toward determining as rapidly as possible time-dosage factors in the treatment of sulfonamide resistant gonorrhea with penicillin. A total of 1,686 patients refractory to at least two courses of a sulfonamide and in some cases to artificially induced fever were treated with total dosages varying from 40,000 to 160,000 Oxford units per case, the individual dose being 10,000 or 20,000 units intramuscularly every three hours.

These studies showed penicillin to be a remarkably effective drug in the treatment of gonorrhea, usually causing disappearance of symptoms and reversal of bacteriologic findings within forty-eight hours. One course of treatment with a dosage of 160,000 units per case effected cures in 98 per cent, 80,000 to 120,000 units in 96 per cent and 50,000 units in 86 per cent. No significant differences in the final results were noted when a given total dose was administered in individual injections of either 10,000 or 20,000 units. Furthermore, little advantage was gained by prolonging the time of treatment schedules beyond twelve hours.

Factors such as duration of infection, previous fever therapy and race appeared to have no effect on the results of therapy.

Of the total of 126 failures to one course of penicillin, 85 were retreated, using a 100,000 unit dosage. Of these, 78, or 91.8 per cent, were cured. Thus, by retreatment of failures with a second course, 99 per cent cures were obtained. No case in the entire series proved to be penicillin resistant.

Complications of gonorrhea responded well to penicillin, although the more serious forms of complications required prolonged treatment with higher dosage.

Reactions to penicillin were inconsequential, and in no instance was it necessary to discontinue treatment for this reason.

Because of the known effects of penicillin on Treponema pallidum, the possibility of masking or delaying the development of early syphilis must be considered.

Finally, it should be recognized that the treatment of gonorrhea has been completely revolutionized in the past few years, first by the introduction of the sulfonamides and, more recently, by the development of penicillin. It is clear that the management of gonorrhea now belongs within the sphere of the chemotherapeutist, and that local treatment is rarely necessary and may do more harm than good.

ABSTRACT OF DISCUSSION

Lieutenant Colonel Irving S. Wright, M. C., A. U. S.: This compilation of important data represents an encouraging example of cooperation in clinical research. This should encourage others to embark on similar studies when maximum data are needed in the shortest space of time. A few comments based on experiences at the Army and Navy General Hospital and at many hospitals later visited may prove of interest. In some patients, both male and female, the cultures became negative within four to six hours after the initial dose. Certain of these patients had had profuse discharges, with positive cultures for six months or more. The possibility that the excretion of penicillin in the discharge is a factor in inhibiting the culture growth must be considered. Two patients, both men, had had profuse discharges for months. Smears from each were positive in the usual sense of interpretation; that is, many gram negative intracellular diplococci, which could not be differentiated from gonococci, were found. Cultures failed to grow the organism. One of these patients had twenty-seven negative cultures in a laboratory that grew practically 100 per cent positive cultures in the remainder of the gonorrhea patients. These 2 patients were treated with five and eight courses of sulfonamides respectively, with hyperthermia and with two courses of penicillin of 100,000 units each. This therapy had absolutely no effect on the discharge or on the organisms seen in the smears. The findings suggest that the organism may not be a true gonococcus, but that is as far as we are able to go. I should like to ask Colonel Turner whether he knows of other examples of this group. We have tried penicillin in the treatment of rheumatoid arthritis which arose during the acute phase of gonorrhea and continued after the discharge had ceased. The etiologic classification of these cases is difficult. They differ from the so-called acute gonorrheal arthritis reported in the paper under discussion. The treatment of patients with typical rheumatoid arthritis has been disappointing in our hands. The broader implications arising from the findings of this and similar studies cannot be overestimated. Once more the scientific approach is leading the way, but the problems of its application must be carefully considered. This is easy for members of the armed forces and relatively easy for the professional prostitute. Today, however, our great source of infection is from the amateur pick-up, the girl who comes from a surprising cross section of our population. The widespread use of penicillin in this group must be the result of careful but intense educational programs. A note of caution must be raised, however, against the widespread increase of promiscuity which may arise, with its resultant serious dislocations to our social structure.

Dr. John F. Mahoney, U. S. P. H. S.: It would be an error not to call attention again to the point that the use of penicillin in the treatment of gonorrhea may have the effect of masking or greatly altering the symptoms of the invasion of a concomitantly acquired syphilis. As the product becomes more generally available and more generally used, an increasing number of instances of faulty and delayed recognition of the latter disease probably will be encountered. Repeated serologic tests for syphilis for at least two months following treatment appears to offer the best safeguard, and this feature may well become an important part of follow-up work. In much of the early work with penicillin, investigators have been faced with the necessity of working with limited amounts of the product. This has called forth efforts to refine the dosage to a point where the utmost in results would be produced by each unit available. In the future, and especially if the material becomes as plentiful as now appears certain, the concept that "the dangerous dose is the small dose" will probably gain adherents. The objective will then be to use a sufficient amount of the drug to produce a clinical response as rapidly as possible. In view of the nontoxic character of the substance, the utilization of larger amounts may be accomplished without an appreciable risk of producing untoward symptoms. The questions of total dosage, the duration of treatment, the interval between injections and the number of injections cannot be considered as established at the present even in the light of the favorable results which have been recorded in the present report. Products of greater purity and the development of preparations which are absorbed and excreted less rapidly may have the effect of permitting treat-

ment schedules to be utilized which are less burdensome and as effective as those in use at the present. The impact of the therapy on incidence of gonorrhea and especially on the public health approach to the disease forms an interesting field of speculation. Should the experiences of the future confirm the impressions which are inescapable on the basis of the material at hand, then surely control of the disease through the medium of the venereal disease clinic will require reorientation. A different type of facility may be needed to implement the new therapy. That gonorrhea may cease to be of major public health importance in the none too distant future seems to be an entirely reasonable assumption.

LIEUTENANT COLONEL THOMAS H. STERNBERG, M. C., A. U. S.: The existence or development of penicillin resistant cases of gonorrhea has been a possibility of great interest and of some concern to the Army. In the data presented by Colonel Turner it is of interest that no true instance of penicillin resistant gonorrhea was encountered, provided three courses of penicillin were administered. Since the termination of these studies, many thousands of individuals with gonorrhea have been treated with penicillin in various army hospitals, and particular efforts have been made to uncover cases not responding to adequate penicillin therapy. While such cases are not infrequently reported, investigation reveals that usually they have been labeled as penicillin resistant on the basis of either inadequate penicillin treatment or persistence of a mucoid discharge, which is bacteriologically negative and later proves to be nongonococcic in origin. I have just completed an extensive trip throughout the southwestern portion of the country, visiting numerous army hospitals routinely using penicillin in the treatment of gonorrhea. During these visits the relatively few instances of so-called penicillin resistant gonorrhea were investigated. In most instances the total dosage of penicillin did not exceed 200,000 units, and in no case was it possible to isolate a strain of gonococcus which was resistant in vitro to the more concentrated dilutions of penicillin. To date the army experience indicates that the incidence of truly penicillin resistant gonorrhea is at least unusual and further suggests that the term penicillin resistant gonorrhea should be applied cautiously and only after failure to respond to comparatively large doses of penicillin as determined by adequate clinical and laboratory studies.

DR. ALFRED COHN, New York: May I report the essential findings of a study on penicillin therapy in 100 women and 20 men who suffered from sulfonamide resistant gonococcic infections. This study is still in progress in collaborations with my associates Dr. Borris A. Kornblith and Dr. Isaak Grunstein. The 100 women were hospitalized for penicillin treatment at the gynecologic service of Dr. Howard C. Taylor Jr. at Bellevue Hospital. Our studies were directed first toward evaluating the optimal total dosage and second to determine an adequate time schedule for cure. The results of administering various amounts of penicillin in the female group point to the fact that a minimum total dosage of 100,000 Oxford units intramuscularly is both necessary and sufficient for bacteriologic cure. The time schedule that was found to be most satisfactory without failure averaged between six and nine hours. The penicillin was administered either in four intramuscular injections of 25,000 units each or by an initial injection of 50,000 units followed by two injections of 25,000 units each. Twenty ambulatory men who suffered for a number of months from sulfonamide resistant gonococcic infections with chronic complications, 18 with prostatitis and 2 with epididymitis, were treated at the Central Clinic of the Department of Health, City of New York. A total dosage of 100,000 Oxford units of penicillin was administered intramuscularly to all 20 patients. Two schedules of therapy were employed: 1. An initial injection of 50,000 units was followed by two subsequent injections of 25,000 units each at three hour intervals; total time of therapy, six hours. 2. An initial injection of 40,000 units was followed by two subsequent injections of 30,000 units each at two hour intervals; total time of therapy, four hours. Thus far no failure of therapy has been encountered in any of these 20 patients who have been followed up by repeated urethral and prostatic smears and cultures over a period of between two and four weeks. Urethral cultures taken at one hour intervals after the initial injection of penicillin became negative between the third and fourth hour after treatment was initiated. Smears of urethral discharges showed involution and disintegration of the gonococci and leukocytes by the end of five hours in most cases. Our findings indicate that an adequate minimal dosage of 100,000 units of penicillin administered over a period of from four to six hours to ambulatory patients is a satisfactory routine in the treatment of sulfonamide resistant gonococcic infection.

COLONEL THOMAS B. TURNER, M. C., A. U. S.: In reply to Colonel Wright's question about observing the organisms which do not grow out on culture, we have observed a similar thing in our hospitals. We assume that it is due to the presence of penicillin and that they do not grow out.

PENICILLIN FOR THE TREATMENT OF CHEMORESISTANT GONORRHEA IN THE FEMALE

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With the advent of the sulfonamides the eradication of gonorrhea from the human race seemed quite likely. The promise contained in the earlier reports for the treatment of gonorrhea with sulfonamides, however, has not been completely fulfilled. Moreover, the therapeutic results for the female have not been so good as for the male, because of vagaries in her anatomic makeup. The physiologic mucoid alkaline secretions of the cervix aid and abet the growth of the gonococcus; the anatomic arbor-like arrangement of the cervical glands conceal this micro-organism in protective depots for survival. Even against such odds the sulfonamides brought under control a very large number of women with acute and chronic gonorrhea. The exceptions were the females who harbored resistant strains or in whom, because of chronicity of long duration, the gonococcus had taken tenacious hold in the subepithelial layers of the mucosa lining Skene's ducts, Bartholin's glands, the endocervix or the fallopian tubes. Chronicity and chemoresistant strains proved a barrier that sulfonamides frequently failed to overcome.

The early reports of 85 per cent cures of gonorrhea with sulfonamides no longer hold, for the persistence of certain strains which have gradually permeated a selected stratum of the populace has reduced the effectiveness of sulfonamides to little better than 55 per cent. It is further true that improved bacteriologic technics have helped to uncover many carriers of gonococci in spite of complete absence of clinical signs and symptoms.[1] The sign on the door, namely a purulent urethral discharge, is not a worthy criterion on which to base a clinical diagnosis of gonorrheal infection. Too frequently, particularly in the old infected case, is it lacking. Too frequently, in spite of a frank urethral discharge, gonococci are not to be found and other organisms, among them the trichomonad, are common offenders.

Pelouze, the prophet of doom in the sulfonamide wilderness, was haunted by the specter of the carrier and the chemoresistant strain. He continually exhorted medical authorities to beware of the false security into which we have been lulled by sulfonamides. Shall we

1. Koch, R. A.; Mathis, E. N., and Geiger, J. C.: Ven. Dis. Inform. **25**: 35, 1944.

be lulled into a similar state of complacency with penicillin? This much is known: that penicillin is an extremely effective bacteriostatic and bactericidal agent, many times more powerful and efficient than the sulfonamides. Much had been expected of other drugs in the past. Penicillin offers much now because it is effective against sulfonamide resistant strains. Will penicillin fast strains develop? Time is of the essence.

MATERIAL

This series comprises 551 females ranging in age from 3 to 48 years, studied at the Southeastern Medical Center during a given period. Of this number 54 per cent were of the Negro race and 46 per cent were white. It is revealing and surprising that 82 per cent of the white females had bacteriologically proved gonorrhea, while a similar diagnosis could be established in only 41 per cent of the Negro women (table 1). Although, comparatively, a far greater number of Negro than white women had clinical evidence of gonorrhea, such as urethritis, induration of the broad ligaments, scarring of the cul-de-sac or pelvic inflammatory masses, nevertheless, the diagnosis was confirmed bacteriologically twice as frequently in white females. Each patient had a minimum of six cultures in an effort to establish a diagnosis of gonorrhea.

One hundred and nine patients in this series were treated with penicillin, and of these 93 per cent had

TABLE 1.—*Analysis of Patients Treated with Penicillin*

Race	Females Studied for Venereal Diseases		Bacteriologically Proved Gonorrhea		Penicillin Treated	
	Number	Percentage	Number	Percentage	Number	Percentage
White.....	258	46.8	213	82.1	84	39.4
Negro.....	293	54.2	122	41.6	25	20.5
Total....	551	100	335	60.8	109	32.5

had one or more courses of sulfonamides. Several gonorrheic females received penicillin without a full course of sulfonamides because of sensitivity to them. Penicillin was administered on a few occasions without a prior course or completion of a course of sulfonamides because of certain considerations, such as pelvic peritonitis or acute exacerbation of a chronic salpingitis. Penicillin was dissolved in a few cubic centimeters of distilled water or saline solution and administered intramuscularly in 10,000 to 20,000 units at three hour intervals until 60,000 to 150,000 units had been administered. One 3 year old girl received a total of 25,000 units and two 9 year old girls each received 50,000 units. One patient had concomitant granuloma inguinale and received 1 million units (table 2). There were no untoward reactions resulting from penicillin therapy.

It is of interest that proportionately one and one-half times as many white females received penicillin as did Negro females. Following penicillin therapy four or more cultures were taken in 85 per cent of the cases. Cultures were taken daily for the first few days and then at intervals of one, two or more days. On the average 6 to 15 cultures were obtained in the greater number of instances (table 3). In 3 instances follow-up cultures were not obtained, as the patients were sent back for observation to the referring agency immediately after therapy and reports were not available at the time of writing. Five patients received a second course of penicillin because positive gonococcus cultures were obtained after a lapse of five or more days following the administration of the first course. One of these, however, was not considered as a relapse but rather as a reinfection. The second round of penicillin varied from 120,000 to 300,000 units. These patients remained bacteriologically negative during the period of observation following the second course of therapy and were

TABLE 2.—*Dosage and Results of Penicillin Therapy*

Dosage of Penicillin	No. of Courses	Relapses
25,000 units.....	1*	0
50,000 units.....	2†	0
60,000 units.....	31	1
75,000 units.....	3	0
100,000 units.....	1	0
120,000 units.....	2	0
150,000 units.....	70	4
250,000 units.....	2	0
300,000 units.....	1	0
1,000,000 units.....	1	0
Total.....	114‡	5

* Age 3 years.
† Two 9 year old girls.
‡ In all, 109 patients; 5 received a second course of penicillin therapy.

dismissed after 6 to 12 cultures as bacteriologically negative for gonorrhea.

The analysis of statistical data in this series reveals two important facts that require further study:

1. A laboratory diagnosis of gonorrhea was established in twice as many white as Negro patients, although the ratio of white to Negro in this series was practically 1:1.

2. Proportionately one and one-half times as many white patients as Negroes received penicillin therapy because of chemoresistance to sulfonamides.

Several questions arise:

1. Is a bacteriologic diagnosis more readily made in white gonorrheic women?

2. Are gonorrheic Negro females more responsive to sulfonamides?

3. Is there a racial factor?

Certain facts must be considered before drawing conclusions. White women are more apt to be seen during the acute phase of gonorrhea, and bacteriologic proof is probably easily obtained during this period. Then again, chronicity of long duration in the Negro group, as evidenced by chronic pelvic inflammatory disease, makes for greater difficulty in establishing laboratory proof of gonorrhea. Failure to obtain a positive gonococcus culture in such cases does not constitute a priori evidence of absence of gonorrhea. In 3 Negro females in whom gonorrhea was suspected, positive cultures were obtained only after the thirteenth, seventeenth and twenty-fourth culture respectively.

TABLE 3.—*Cultures Following Courses of Penicillin*

	None	1-3	4-5	6-10	11-15	16-20	21-25
White.....	3	12	10	38	21	2	1
Negro.....	0	2	2	13	7	1	2
Total.....	3	14	12	51	28	3	3

Are sulfonamides more specific for gonorrhea in the Negro race? It is the opinion in military circles that this is so, and this view is shared by Pelouze.[2] This phenomenon may be more apparent than real and is worthy of further study. If such a racial factor exists it may explain the proportionately larger number of white females for whom the administration of penicillin was required because of chemoresistance to sulfon-

2. Pelouze, P. S.: Ven. Dis. Inform. **25**: 76, 1944.

amides. We feel, however, that this discrepancy is not a real one. The study of the Negro female for a longer period of time, under more rigid tests, such as slight cauterization of the cervix, mild dilatation of the cervical os and repeated pelvic examinations, may yield a greater number of positive cultures in this group during the carrier and asymptomatic state.

ANALYSIS OF RESULTS WITH PENICILLIN THERAPY

Following penicillin therapy the cultures obtained within twelve to twenty-four hours usually were negative. In 9 instances positive cultures were obtained twenty-four hours after penicillin, in 3 after forty-eight hours, in 3 after seventy-two hours and in 4 after ninety-six hours. Patients in whom a positive smear or culture was obtained after the fifth day were considered to be therapeutic failures. In 4 patients positive cultures were obtained on the fourth and ninth days, fifth and seventh days, sixth and ninth days and the eighth day respectively. In 2 others positive smears but negative cultures were obtained, in 1 on the fourth and eighth days and in the other on the tenth day. In reality, 6 patients gave evidence that the gonococcus was not eradicated by the fifth day following penicillin. Positive cultures were obtained in 5 other patients who received penicillin therapy on being checked at various intervals by the referring agency after their dismissal from the hospital. Positive cultures were obtained on the tenth, seventeenth, twenty-first, twenty-fourth and sixtieth days respectively. In each instance it was believed that reinfection rather than a relapse occurred.

It must be said that, following penicillin, urethral discharge and symptoms of vaginitis, salpingitis and pelvic peritonitis frequently abate within twenty-four to forty-eight hours. On the other hand, purulent urethral and cervical secretions continued in many despite absence of bacteriologic proof of gonococcic infection.

CONCLUSIONS

Penicillin is an effective drug for the therapy of chemoresistant gonorrhea in the female. One hundred and nine patients received courses of penicillin; of these, 84 were white women and 25 were Negroes. Five hundred and fifty-one women (46 per cent white and 54 per cent Negroes) were studied for venereal diseases and in 61 per cent laboratory evidence to support the diagnosis of gonorrhea was obtained. Proportionately, one and one-half times as many white women received penicillin for chemoresistant gonorrhea. The impression that Negro women are more responsive to sulfonamides is more apparent than real. During the period of observation in this series, therapeutic failures were obtained in 5 women following penicillin. A favorable response was obtained after a second course of therapy.

The excellent results that are being obtained now with penicillin will not engender, it is hoped, too great a degree of optimism.[3] The dosage of penicillin should not be reduced to the minimum necessary for good results. It should be maintained at a sufficiently high level so that the development of penicillin resistant strains may be thwarted.[4] To this end it is recommended that 150,000 units be used, although good results may be obtained with as little as 60,000 units. A warning note is sounded that asymptomatic carriers may develop and that penicillin resistant strains of gonococci may appear.

3. Cohn, A.; Studdiford, W. E., and Grunstein, I.: Penicillin Treatment of Sulfonamide Resistant Gonococcic Infections in Female Patients, J. A. M. A. **124**: 1124 (April 15) 1944. Herrell, W. E.; Cook, E. N., and Thompson, L.: Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections, ibid. **122**: 289 (May 29) 1943. Cook, E. N.; Pool, T. L., and Herrell, W. E.: Proc. Staff Meet., Mayo Clin. **18**: 433 (Nov. 17) 1943. Mahoney, J. F.; Ferguson, C.; Buchholtz, M., and Van Slyke, C. J.: Am. J. Syph., Gonor. & Ven. Dis. **27**: 525 (Sept.) 1943. Robinson, N. J.: Brit. M. J. **2**: 635 (Nov. 20) 1943. Van Slyke, C. J.; Arnold, R. C., and Buchholtz, M.: Am. J. Pub. Health **33**: 1393 (Dec.) 1943. Penicillin in War Wounds: A Report from the Mediterranean, Lancet **2**: 743 (Dec. 11) 1943; The Treatment of War Wounds with Penicillin, Brit. M. J. **2**: 755 (Dec. 11) 1943. Strauss, H.: Am. J. Obst. & Gynec. **47**: 271 (Feb.) 1944.

THE ROLE OF THE SKIN AND CORNEAL LAYER IN EDEMA FORMATION

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NEW ORLEANS

With the present exacerbation of interest, because of the war, in the physiology of shock, of burns, of blood vessels and edema and of water and electrolyte balance it was considered advisable to review the role of the skin and especially the thin dead corneal layer of the epidermis in these states.

In the evaluation of the factors concerned with the regulation of edema formation, the role of the skin is neglected. The importance of the skin becomes apparent when the extravascular physical factors involved in edema are considered. The importance of tissue pressure in the regulation of edema formation is generally accepted today.[1] Tissue pressure becomes increasingly important as edema fluid accumulates,[2] ultimately becoming one of the most important factors inhibiting further progress of the edema. This is obviously true, for when the volume of intracellular and extracellular fluid accumulates the tissues become separated and the volume of the part increases. Because of the fibrous connective tissue, trabecules, blood vessels, nerves, lymphatics, tendons, muscle and other structures, the tissues tend to be held together and resist separation, thus resulting in an increase in the hydrostatic pressure of the tissues. As greater volumes of edema fluid gather, the absolute value of the tissue pressure increases, attaining extremely high values at times.[2]

It was also shown previously[3] that the skin is an important factor which limits the accumulation of edema fluid. As edema fluid gathers in the tissues the part distends, the tissue pressure increases and the skin is stretched, exerting a counter force against the tissues and fluids within. This counter force contributes to the tissue pressure and thereby tends to limit edema formation. The resistance to distention or stretching offered by the skin reflected by the aforementioned counter force is most probably maintained to a larger extent by the fibrous connective tissue of the corneum, with the layers of the epidermis contributing a lesser but significant part. The role of the skin in the physical

4. Mahoney, J. F.: Communication to Medical Director, Venereal Disease Division, United States Public Health Service.

From the Department of Medicine, Tulane University School of Medicine, and the Charity Hospital of Louisiana.

1. Peters, J. P.: Body Water: The Exchange of Fluids in Man, Springfield, Ill., Charles C Thomas, Publisher, 1935, p. 52. Burch, G. E.: Formation of Edema in the Eyelids of Man, Arch. Int. Med. **65**: 477 (March) 1940. Warren, J. V.; Merrill, A. J., and Stead, E. A., Jr.: The Role of the Extracellular Fluid in the Maintenance of a Normal Plasma, J. Clin. Investigation **22**: 635, 1943. Burch and Sodeman.[2]

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limitation through the medium of tissue pressure is well known to every one who has seen the shiny smooth skin of the edematous leg and the wrinkled rough skin of the same leg after the edema has disappeared.

Once a part such as a leg has become fully distended and the skin has reached its limits of distention, the escape of fluid from the blood vessels cannot be any greater than the return of tissue fluid to the blood vessels unless the skin breaks and allows the escape of fluid to the outside. This phenomenon is well known clinically in patients with pronounced edema of the legs in whom the epidermis of the skin of the legs cracks and "weeps" edema fluid continuously until the edema state is relieved. It is usually only under such conditions that one is aware of the role of the epidermis in the limitation of quantity of water lost from the blood vessels. The epidermis of the skin, however, is continuously active as a factor inhibiting water loss from blood vessels in that it inhibits the loss of fluid from the tissues outside and in turn from the vascular system by preventing diffusion and oozing of water into the atmosphere. The importance of this influence is well known in burns and has been studied recently in living and dead skin.[4] Although this role of the skin is active in the normal subject, its influence becomes even more significant quantitatively in the presence of edema, increasing in importance as the edema increases.

It was found [5] that the corneal layer of the epidermis, a layer of microscopic thickness except in the palms and soles, was the layer of the skin that was of greatest importance in the inhibition of water loss by diffusion from the underlying tissues of the part. Niching the corneum of the skin of an edematous part permits the underlying edema fluid literally to flow at times as it escapes from the body. This is more vividly exemplified by the puncture of a blister cap, with the rapid escape of blister fluid. These simple experiments as well as others [4] indicate the significant and peculiar role of the corneum in holding fluid within the body, thereby maintaining tissue pressure, inhibiting edema formation and the loss of vascular fluid.

In normal physiologic states [6] little water diffuses through the epidermis of the skin. This is true even in the presence of much underlying edema fluid and the existence of pronounced distention of the corneum. This is again illustrated nicely by a blister.[4]

Were it not for the overlying very thin layer of corneum, fluid that escapes into the tissue spaces would diffuse through the skin to the outside and tissue pressure would not rise appreciably if at all. Fluid would also continuously escape from the blood vessels, upsetting water balance and electrolyte balance and resulting in pronounced disturbances in normal physiologic states. Further action of the corneal layer of the epidermis and the skin as a whole in local and general water and electrolyte balance is obvious from the previous discussion.

It is therefore well to remember that the "dead," keratinous, ever desquamating, thin corneum enjoys a significant role in human physiology not only by protecting the body from trauma, bacterial invasion and the like but also in the maintenance of a normal water and electrolyte balance; the latter functions of the corneum are rarely if ever appreciated. There is a need for a better understanding of the physiology of the skin as well as a need for more careful and scientific care of the skin both in health and in disease and especially by quantitative and qualitative evaluation of its part in edema formation. Because as a general rule the corneum remains intact is no reason why it should be neglected in the consideration of problems of water balance.

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Clinical Notes, Suggestions and New Instruments

ORBITAL CELLULITIS TREATED SUCCESSFULLY WITH PENICILLIN

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Orbital cellulitis is an inflammation of the retrobulbar tissue. It is an acute disease and usually begins with serious general symptoms, fever and pain. The lids are swollen; the conjunctiva is chemotic and the eyeball is usually displaced in the direction of the orbital axis and its mobility is impaired. This is due partly to mechanical protrusion and partly to simultaneous infiltration of the muscles and paresis of the nerves. Pain is dull in character and increased by movements of and pressure on the eyeball; but there are no points of tenderness, such as are encountered in periostitis and sinusitis.

The course of the disease may vary; the condition may appear threatening, yet no suppuration takes place. In other cases, pus perforates in a very short time through the lid or conjunctiva, producing a fistula which may heal quickly or last a long time.

ETIOLOGY

This condition may be caused by traumatism. A foreign body such as a sharp stick or the point of a pencil may be driven through the conjunctiva into the orbit and broken off, where it may be hidden and leave no visible wound or other trace.

Mumps, tonsillitis, puerperal fever and other infectious diseases may also cause the condition, as well as dacryocystitis, thrombophlebitis of the facial veins or a panophthalmitis. In 60 per cent of the cases (according to Foster) it originates from an inflammation of one of the accessory sinuses. The direction in which the eyeball is displaced is helpful in determining which sinus or sinuses are involved.

BACTERIA

The principal bacteria found are the staphylococcus and streptococcus, but the pneumococci and the typhoid and pyocyaneus bacilli may also be found.

COURSE OF THE DISEASE

This is a dangerous disease and may lead to blindness and even loss of life. Blindness may be caused by thrombosis or embolism of the retinal vessels. Hemorrhages and optic atrophy may be observed. The condition may be produced by circulatory disturbances, compression of the optic nerve or toxic effects. Thrombophlebitis of the central vein plays an important part.

There may also be corneal complications, with perforating ulcers and phthisis bulbi.

Read before the Section of Ophthalmology, College of Physicians, April 20, 1944.
The medical department of the Jefferson Hospital assisted in the treatment of the patient.

OTHER COMPLICATIONS

Meningitis, abscess of the brain or thrombosis of the cavernous sinus may cause death and, according to Birch-Hirschfeld, does so in about 17 per cent of the cases.

REPORT OF CASE

History.—Charles C., aged 12, attended school on (Tuesday) Jan. 25, 1944. During the afternoon he complained of feeling ill and having a headache and some fever. He was visited by his family physician (Dr. Joseph A. Seiden), who could find nothing definitely wrong except that the child had an increase in temperature. On the following day, January 26, the lids of the left eye began to protrude and there was considerable proptosis of the eyeball accompanied by chemosis of the conjunctiva and pronounced edema of the lids.

I was called in consultation on Friday, January 28. On examination I found pronounced redness, swelling and edema of the lids of the left eye, with an extensive chemosis of the conjunctiva. The eyeball was proptosed about 15 mm. anterior to the right eye and was immobile. The pupil was dilated to 8 mm. but reacted to light. The tension of the eyeball was normal.

The ophthalmoscopic examination of the right eye revealed no pathologic change. The left eyeground showed a definite fulness of the optic disk, with considerable hyperemia. The veins were distended, broad and tortuous. The disk outlines were distinct. There were no hemorrhages or exudates present at this time.

Fig. 1.—Appearance of patient with cellulitis of the left eye on Feb. 1, 1944, the fifth day of disease.

I made a diagnosis of cellulitis of the left orbit and sent the patient to the Jefferson Hospital for further study and surgical treatment.

He was admitted to the hospital on January 29. His temperature was about 102 F. The pulse and respiration were rapid. He was examined by Dr. Warren B. Davis of the ear, nose and throat department the next morning, who found exophthalmos with lateral displacement of the left eyeball, edema of the conjunctiva and inflammation of both lids. The upper, middle and lower turbinates in both nostrils were boggy and obstructed drainage. The left nasal passage was filled with purulent exudate. Dr. Davis advised a good sized opening of the left antrum under the turbinate, with removal of the left middle turbinate and part of the left wall of the ethmoid. Dr. Davis felt it probable that pressure from the purulent

Fig. 2.—Appearance on March 29, after treatment with penicillin.

exudate had shoved the periosteum of the ethmoid away from the bone, thus pushing the orbital structure forward then laterally.

The patient was seen also by Dr. Wagers, who agreed with Dr. Davis and who arranged to operate on the following afternoon.

X-ray findings at this time, January 29, reported by Dr. Teplick, showed a large amount of fluid in the left antrum and the left ethmoid quite cloudy. There was no evidence of osteomyelitis or bone destruction. The right antrum and ethmoid were relatively clear. The frontal sinus was undeveloped.

Blood Studies.—When the patient was admitted, a white cell count was made and found to be 12,000. On January 31 another blood study was made, which disclosed hemoglobin 71 per cent, white blood cells 9,300, lymphocytes 21, monocytes 1. Blood culture showed no growth in forty-eight hours. A conjunctival swab taken on February 1 showed Staphylococcus aureus and Bacillus xerosis. A swab taken from the maxillary antrum showed 240 colonies of Staphylococcus aureus.

General Examination.—The boy was severely ill. Aside from the cervical adenopathy on the left side and the condition of his left eye, everything proved to be normal.

His past history revealed that he had mumps, measles, chickenpox and bronchopneumonia. The family history was negative.

Treatment.—When I first saw the patient, I immediately ordered sulfadiazine in fairly large doses. This was continued from January 28 until the 31st, when he was given penicillin. The sulfadiazine was discontinued, as he appeared to show no improvement from its use. During the first twenty-four hours 100,000 units of penicillin was administered intravenously; there-

after, 50,000 units every twenty-four hours daily. This treatment was given from January 31 to February 9 inclusive. He received a total of about 500,000 units of penicillin.

Course of the Disease.—Following the first injection of penicillin the patient began showing improvement both locally and generally. The temperature showed improvement and continued to waver between 99.3 F. and normal. The pulse was correspondingly down from 110 to 80, varying, however, sometimes going up to 100 or more.

The local condition of the eye continued to show improvement. The edema and chemosis subsided gradually; the eyeball began to recede, and some motility was present on the third day after the penicillin was started. On February 12 the left eye was open. No photophobia or diplopia was present. Eye swelling, redness and chemosis were very much less. The temperature, pulse, respiration and blood pressure showed a normal range. The last culture of the left maxillary antrum showed no growth in the last forty-eight hours.

X-ray examination on February 10, as reported by Dr. Teplick, revealed complete clouding of the left antrum, also of the left ethmoids, although not as cloudy as on the previous examination.

The patient remained in the hospital until February 19. At this time the local condition of the eye was nearly normal. The eyeground showed much improvement. The optic disk was almost entirely clear and the color was normal. There was some tortuosity of the veins still present but not pronounced. The motility of the eye was good in all directions, and the patient could open and close his lids at will. Vision in both eyes was normal.

SUMMARY AND COMMENT

In a case of orbital cellulitis of the left eye in a boy of 12 the cause was established to be sinusitis involving the left ethmoids and the maxillary antrum. Operation was contemplated both for the sinus condition and locally to establish drainage and relieve the inflammation and swelling of the orbital tissues. However, under the continued use of penicillin intravenously for a period of ten days the condition cleared up completely, so that it was unnecessary to operate. Sulfadiazine in fairly large doses was tried without affecting the disease in any way and was discontinued when penicillin was administered. Local treatment was limited to applications of hot magnesium sulfate solution continuously and instillation of atropine sulfate 1 per cent three times daily.

1717 Pine Street.

BRONCHIAL ASTHMA AS A MANIFESTATION OF SULFONAMIDE SENSITIVITY

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As far as can be determined, convincing evidence of bronchial asthma as a manifestation of sulfonamide sensitivity has not been described, although it has been mentioned in this respect.[1]

We report 2 cases, each with a history of asthma following the ingestion of a sulfonamide drug. In 1 instance the trial ingestion of sulfathiazole produced a severe paroxysm of asthma; in the second case the trial ingestion of sulfadiazine, although not producing clinical asthma, resulted in a definite diminution in the vital capacity.

CASE 1.—F. F., a man aged 44, a metal worker, was admitted to the University Hospital in status asthmaticus Sept. 21, 1943. The history as obtained from the patient and his local physician revealed that seven days prior to admission he had sought advice regarding a chronic nasal infection, presumably resulting from plucking nasal hairs. Large white tablets were prescribed with instructions to take two every four hours, also ephedrine nose drops containing 2.5 per cent sulfathiazole.

Within twenty-four hours he developed a generalized rash, rhinorrhea, nasal stuffiness and conjunctival injection with periorbital edema. The unidentified tablets were then changed to sulfathiazole 0.65 Gm. every four hours, which was continued for a period of three days. The sulfathiazole nose drops were used in addition for a total period of seven days.

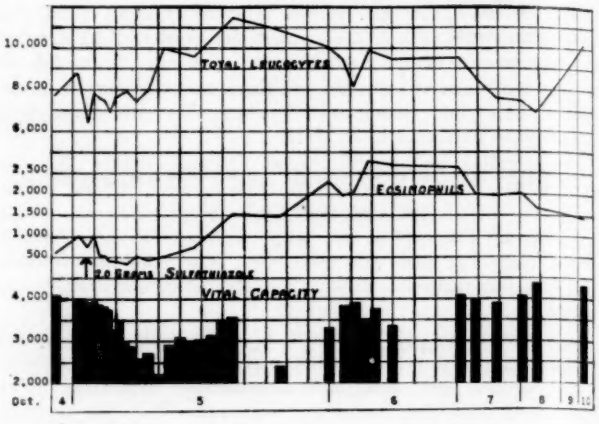

Chart 1.—Blood and vital capacity response following the trial ingestion of sulfathiazole (2 Gm.) in case 1.

His reactive symptoms were most pronounced the second day, thereafter subsiding to the point that he was feeling well by the fifth day and he returned to work on the sixth. At 10 p. m. of the seventh day of sulfathiazole therapy, September 20, he suddenly started to cough, followed by wheezing and dyspnea. These symptoms progressed alarmingly and were not relieved by epinephrine, ephedrine or morphine. He was admitted at 4:30 a. m. September 21.

There was no evidence of asthma or other allergic manifestations in his past or family history. There had been no previous treatment with sulfonamides as far as the patient or his physician was aware. Previous sulfonamide therapy cannot be excluded, however, as he had treated his nasal condition locally with numerous unidentified proprietary medications for the preceding six months.

On admission he exhibited extreme dyspnea and wheezing. Examination revealed the typical features of bronchial asthma, and there were no abnormal cardiac findings. The blood pressure was 130 mm. of mercury systolic and 100 diastolic. Laboratory data, including stereoscopic x-ray examination of the chest, were not outside normal limits.

He remained in status for three days in spite of rigorous treatment, including oxygen therapy, aminophylline intravenously and ether and oil by rectum. He did not become symptom free until a week after admission.

On his fifteenth hospital day, after he had been asymptomatic for a week, he voluntarily ingested 2 Gm. of sulfathiazole in a fasting condition. Within seven hours his vital capacity dropped from an initial level of 4,000 to 2,150 cc. At two hours he first complained of somnolence. At two and one-half hours he noted a sensation of heaviness in his chest. Four hours after ingestion he developed his initial coughing and dyspnea, sibilant rales were detected on chest examination for the first time and his vital capacity fell to 2,950 cc. Symptoms of asthma persisted for a total of twelve hours; cyanosis was present when the vital capacity was at the lowest level. With the exception of a reading of 2,350 cc. obtained on awakening the patient at 3 a. m., the vital capacity gradually returned to the preingestion normal within a period of forty-eight hours.

Total leukocyte and eosinophil counts were determined every half hour for the first three hours, hourly during the next three hours and at less frequent intervals for a total of 127 hours. A diluent of phloxine and methylene blue dissolved in equal parts of propylene glycol and water, previously described by

Technical assistance was rendered by Miss Carol L. Stanton.

From the Allergy Clinic, Department of Internal Medicine, University of Michigan Medical School. This study was financed in part by the Parke, Davis and Company.

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one of us,[2] was used in these determinations. With this method the eosinophils stain in the counting chamber; their enumeration in the same sample as used in determining the total leukocyte count gives more accurate values than obtained in the differential counts from stained films.[3] The number of eosinophils per cubic centimeter of blood was obtained by counting the cells in nine squares of the counting chamber and multiplying by 22.2. Control counts were made from Wright stained films.

Variations in the blood findings and vital capacity are shown in chart 1. The preingestion total leukocyte count of 8,750 fell to 6,400 cells per cubic millimeter at one-half hour and then returned to the previous level. A count of 9,950 was obtained thirty minutes after the first food was taken at 4 p. m. Higher counts were obtained later, but a return to the preingestion normal did not occur until the third day.

The eosinophils showed a slight rise in the first hour (11.2 to 13.2 per cent); at the end of three hours they fell to 4.1 per cent, from which there was no significant change until ten and one-half hours. Successive counts thereafter showed a surprising rise to 29 per cent at thirty-five hours. A high level was maintained for the succeeding forty-four hours and was still elevated (14.0 per cent) at the conclusion of the period of observation. In chart 1 the eosinophil counts are plotted in absolute numbers.

The patient has remained free from asthma for the ensuing eight months period.

CASE 2.—M. M., a white woman aged 34, a secretary, gave a history of infantile eczema occurring during the winter months from the age of 5 to 7.

In May 1937 she moved to an old house and in August developed rhinorrhea, sneezing, itching of the nose and eyes and intermittent nasal obstruction. Asthma occurred for the first time in November and continued intermittently through the winter in spite of house dust hyposensitization and wheat avoidance. Trial ingestion of wheat precipitated increased rhinitis and asthma. In February 1939 she moved to a new house, and although the rhinitis continued it remained distinctly less troublesome and she had only two attacks of asthma after making this change.

In October 1941 she was hospitalized because of a complaint of chest pain accompanied by a temperature of 102.5 F. X-ray evidence suggested pneumonia. Pneumococci could not be

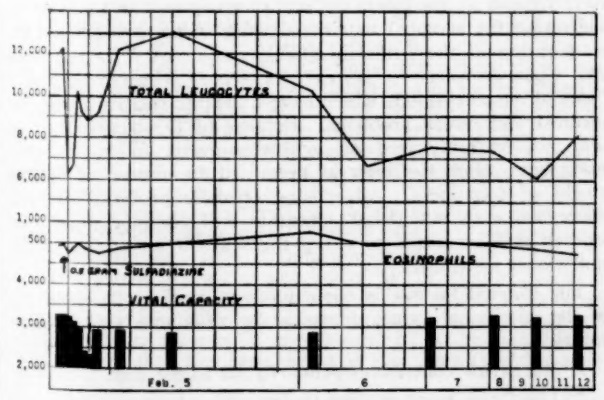


Chart 2.—Blood and vital capacity response following the trial ingestion of sulfadiazine (0.5 Gm.) in case 2.

demonstrated as the causative organism, and a diagnosis of streptococcic pneumonia was made. She was treated with 6 and later 8 Gm. of sulfadiazine daily for a ten day period, receiving a total of 67 Gm. Twenty-four hours after the drug was started she complained of a dull headache, which gradually became more pronounced and persisted for eleven days. On the fifth day a sore throat developed, followed on the seventh by nausea, backache and extreme fatigue, and the ninth day by a fine macular erythematous rash over the arms, back and buttocks. At this time cyanosis and dyspnea become more pronounced and she was placed in an oxygen tent. In spite of this measure the difficulty in breathing increased; the rash also became more prominent and generalized. Sulfadiazine was discontinued at this point. In the following twenty-four hours her breathing became easier and the cough more productive. Forty-eight hours after the drug had been stopped the headache and rash subsided. The fever, which had ranged between 100.0 and 101 F., returned to normal coincident with general improvement. However, extreme fatigue persisted for several days.

A total leukocyte count of 6,600 cells per cubic millimeter on admission prior to sulfadiazine therapy decreased to 4,800 on the fifth day but later returned to an average count of 7,000. The maximum count was 8,700 cells per cubic millimeter.

In December 1942 she had an upper respiratory infection associated with soreness of the throat of two weeks' duration. She received one dose of sulfadiazine (0.5 Gm.) at 1 p. m. At 4 o'clock she noticed flushing of the face and mild dyspnea, which progressed into severe asthma, her first attack in over three years. By 6 o'clock she had a fever of 101.0 F. and complained of fatigue, backache and generalized joint pains. Asthma persisted throughout the night. The following morning all symptoms had subsided except for residual fatigue and, incidentally, the soreness of the throat, which had not changed. Blood counts were not taken.

She had had no other sulfonamide therapy until she volunteered to take 0.5 Gm. of sulfadiazine at 9:30 a. m. Feb. 5, 1944. The drug was taken fasting, and similar studies were made as in the preceding case.

As may be noted in chart 2, a precipitous fall in the total leukocyte count occurred at one-half hour. From a preingestion level of 3,200 cc. the vital capacity fell to 2,300 two and one-half hours after ingestion, at which time she noticed flushing of the face. A frontal headache developed at three hours; this gradually became more severe and finally wore off at ten hours. Somnolence and fatigue followed. There were no residual symptoms the following day, although the vital capacity did not return to normal until forty-eight hours had elapsed. Aside from this measurement there was no other evidence of bronchial asthma. The temperature remained normal throughout the period of observation. As may be noted from chart 2, the initial neutropenia was followed by an increase to the preingestion level, from which the count gradually fell to between 6,000 and 7,000 per cubic millimeter. The eosinophil count decreased from a preingestion value of 3.7 per cent to 2.6 per cent at the height of symptoms at three and one-half hours, from which it increased to a maximum of 7.4 per cent twenty-five hours after taking the drug.

COMMENT AND SUMMARY

Two cases of bronchial asthma resulting from sulfonamide sensitivity were observed. In 1, status asthmaticus developed in a person with a negative past and family history of allergy on the seventh day of sulfathiazole nasal therapy. Two weeks after cessation of the drug and after the patient had been asthma free for a period of a week, a trial dose of sulfathiazole reproduced a typical asthmatic paroxysm, as measured by a drop in the vital capacity and confirmatory physical findings.

In a second case with a previous history of atopic dermatitis, allergic rhinitis and bronchial asthma, there was a recurrence of asthma after the first dose of the second attempt to prescribe sulfadiazine. Trial ingestion of the drug a year later resulted in a diminution of the vital capacity but no other evidence of asthma.

The eosinophils in both cases diminished during the stage of reactive symptoms but increased to relatively high levels twenty-four to forty-eight hours after ingestion.

700 North Michigan Avenue, Chicago—University Hospital, Ann Arbor, Mich.

2. Randolph, T. G.: Enumeration and Differentiation of Leukocytes in the Counting Chamber and Propylene Glycol-Aqueous Stains, Proc. Soc. Exper. Biol. & Med. **52**: 20, 1943; Blood Studies in Allergy: I. The Direct Counting Chamber Determination of Eosinophils by Propylene Glycol-Aqueous Stains, J. Allergy **15**: 89, 1944.

3. Randolph, T. G., and Stanton, C.: A Comparison of the Counting Chamber and Film Methods of Enumerating Eosinophils, to be published.

Council on Foods and Nutrition

The Council on Foods and Nutrition has authorized publication of the following report.

GEORGE K. ANDERSON, M.D., Secretary.

MARGARINE FORTIFIED WITH VITAMIN A

Margarine, sold under the legal designation "oleomargarine," is manufactured in forty-three plants primarily as a table fat or spread for bread, although it is also offered for baking and cooking. Present day margarine is the product developed through (1) improved methods of refining and processing fats, resulting from the additional knowledge of the chemistry of fats and oils, and (2) the application of nutritional research.

The first commercial production of margarine is recorded as by the Frenchman Meges-Mouries in Paris in 1870, who had earlier developed the product. The French government had assigned to him experimental work with fats as part of the effort to produce a cheaper product which would serve in place of butter in the domestic economy. The early product was made principally with oleo oil, but soon neutral lard and vegetable oils were used. With the development of hydrogenation first coconut oil and then other vegetable oils soon dominated the field. The accumulated knowledge and skill have made possible the utilization of the many domestic fats and oils which have been made available under present wartime conditions.

The legal definition and standard of identity of oleomargarine permits the use of animal or vegetable fat, oil or stearin or combinations of them to give not less than 80 per cent fat in the finished product. The fat ingredients are usually mixed with skim milk, although dried skim milk and water, milk or cream are permitted. Optional ingredients which are usually present and must be declared on the label are sodium benzoate (preservative), artificial flavoring, diacetyl or starter distillate, lecithin or monoglycerides and diglycerides, and salt. The use of artificial coloring has recently increased appreciably. The addition of vitamin A as fish liver oil or as a concentrate of vitamin A from fish liver oil is authorized, but this is still on an optional basis, although, when added, the finished product must contain not less than 9,000 U. S. P. units of vitamin A per pound.

The oils and fats used in the manufacture of margarine have varied widely over the years, and this may be expected in the future as availability and low prices are controlling factors. The factor of suitability is becoming a relatively less serious problem as technology overcomes the difficulties presented by the use of certain oils. This is currently being demonstrated by the improved keeping quality of margarine containing large amounts of soybean oil. The variation in the fat component of margarine as an indication of the industry's ability to adapt to changing conditions is illustrated by the consumption of foreign and domestic oils. In 1933 more than 75 per cent of the oil used in margarine was imported coconut oil. During that year the use of soybean oil was negligible, and only 9 per cent of cottonseed oil was used. In 1942 the use of coconut oil had dropped to 1 per cent, and none was used during 1943. In the latter year 90 per cent of the oil used in margarine consisted of cottonseed (50.4 per cent) and soybean (39.6 per cent) oils.

Margarine has long been a factor in the diet of a substantial group of persons, and with the wartime shortages of other spreads for bread it has increasing nutritional importance to a very large percentage of the population. The production of margarine has increased from the ten year (1930-1939) average of 312,675,325 pounds and 300,803,741 pounds in 1939 to 613,974,107 pounds in 1943, or 196.4 per cent of the production four years ago. Margarine contributed last year 3.2 pounds per capita of a total food fat disappearance of 45.8 pounds per capita and of total table fat consumption of 15.2 pounds per capita. Thus, margarine represented 7.0 per cent of the total food fat and 21.1 per cent of the total table fat. The digestibility (rate or completeness of digestion) of the various food fats shows only small differences. In the case of the table fats factors of 96 to 97 found throughout scientific literature indicate equal digestibility.

The early deficiency of vitamin A in margarine has been corrected, primarily because of the application of the full force and influence of nutritionists throughout the country on the problem. The beginning of the widespread use of vitamin A in margarine dates from the authorization of its use in margarine manufactured in plants under Federal Meat Inspection in February 1941 and adoption of the Definition and Standard of Identity for Oleomargarine in June 1941. It is estimated that 85 per cent of the margarine was fortified by vitamin A during 1942. This increased to over 90 per cent in 1943, and industry reports indicate that now more than 99 per cent of the margarine sold to civilians contains not less than 9,000 U. S. P. units of vitamin A per pound. All of the nearly 90 million pounds purchased by federal agencies in 1943 was required to be so fortified. A small percentage of the total production classed by industry as "industrial sales" and sold to bakers and other establishments is unfortified. The Bureau of Human Nutrition and Home Economics recently estimated for 1943 an average of 7,000 international units of vitamin A per capita daily to have been available from food. Fats and oils, the bureau estimates, contributed approximately one tenth of this amount, but practically all of it was from table fat, as the vitamin A from other food fat is negligible. The compulsory addition of vitamin A is a needed safeguard equal in importance to the minimum fat requirement of the official standard.

The fact that margarine is cheaper to produce than butter is nutritionally important, and attempts to stigmatize it or restrict its distribution are undesirable. The Council is concerned wholly with nutritional value, and no consideration has been given to the economic effect of taxes reducing the margin of cost between the two products or their elimination. A continued demand that the two products be clearly identified may be expected, and this should be required; but the drastic, though effective, control of misrepresentation through fiscal measures of license and tax is still in controversy.

Many of the brands of margarine fortified with vitamin A have carried on the labels the seal of acceptance of the Council, indicating the accepted nutritional value of the product and the cooperation of the firms in adding vitamin A. In July 1943 the Council voted to restrict its scope primarily to those "special purpose" foods which have a definite relation to specific medical and health problems. Because of this action the seal will not be authorized on general purpose foods, including margarine, after the interval permitted to dispose of present stocks of containers. Advertising of these products which is concerned with nutritional education will continue to be considered and permitted to carry the seal on acceptance of the nutritional statements.

The Council takes this opportunity to reaffirm its confidence in the nutritional value of margarine containing vitamin A as follows:

1. Margarine contributes primarily fat to the diet.

2. The fat is equal in digestibility and caloric value to other food fats.

3. The standardized vitamin A content of fortified margarine was so set that it contributes this nutritional factor in amount equivalent to average butter in accordance with information available at that time. (Recent surveys indicate a higher average value for butter.)

4. The milk solids other than fat (1 per cent) present in both butter and margarine are of negligible nutritional importance.

5. When margarine is fortified with vitamin A the investigations that have been made lead to the conclusion that it can be substituted for butter in the ordinary diet without any nutritional disadvantage.

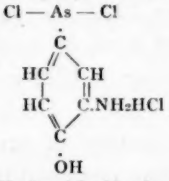
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN E. SMITH, M.D., Secretary.

DICHLOROPHENARSINE HYDROCHLORIDE.—Clorarsen.—"Dichlorophenarsine·Hydrochloride, when dried in a vacuum desiccator over phosphorus pentoxide for twenty-four hours, contains not less than 25.3 per cent and not more than 27 per cent of total arsenic (As)."—U. S. P.



"Dichlorophenarsine Hydrochloride is usually distributed as a mixture with buffering agents and suitable substances to render its solution physiologically compatible with human blood. The label must indicate the names of the admixed substances, and the composition of the mixtures (containing Dichlorophenarsine Hydrochloride as the only active therapeutic agent) shall be approved by the National Institute of Health. Mixtures contain total arsenic equivalent to not less than 92.5 per cent and not more than 107.5 per cent of the labeled amount of Dichlorophenarsine Hydrochloride. Mixtures also meet the requirements for identification, loss on drying, thermostability, completeness of solubility and storage.

"Dichlorophenarsine Hydrochloride and its mixtures must be prepared in an establishment licensed for the purpose by the United States government upon the recommendation of the Surgeon General of the United States Public Health Service. Each lot of the product before being offered for sale must comply with the toxicity, labeling and other requirements of the National Institute of Health, and be released by the Institute."—U. S. P.

For description and standards see the U. S. Pharmacopeia under Dichlorophenarsinae Hydrochloridum.

Actions and Uses.—In recent literature may be found reports of an arsenical antisyphilitic agent which apparently was discovered in the early part of this century but was cast aside as being too toxic for clinical use. Some years later there were published reports on its use in animals and in the treatment of yaws and human syphilis. It was not until 1941 that 3 amino-4-hydroxyphenyl dichloro-arsine hydrochloride was found satisfactory for the treatment of syphilis; apparently the earlier studies were based on the use of an unbuffered compound which would provide a very low p_H.

The preparations now available on the market contain sufficient alkaline buffering agent to make neutral a prepared solution for injection. They contain approximately 26 per cent of trivalent arsenic. On the addition of sterile distilled water to an ampul containing the mixture of dry dichlorophenarsine hydrochloride and alkaline buffer a reaction takes place, with the result that arsenoxide is supposed to be formed. It has been claimed that the latter agent is the therapeutically active part of the compound.

(A preliminary report of the Council appeared in THE JOURNAL, Sept. 25, 1943, p. 208.)

Dosage.—Initial dose 0.03 Gm. for women and 0.04 Gm. for men intravenously. The second dose may be increased to 0.04 Gm. for women and 0.06 Gm. for men. The maximum dose may be regarded as 0.06 Gm. Injections may be given every four to five days, as it is excreted rapidly.

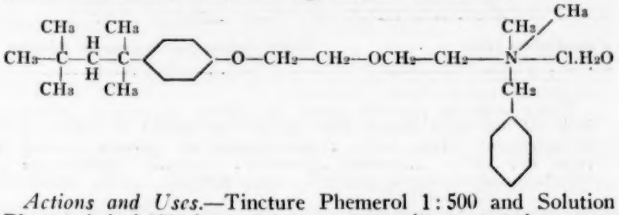
For children, the initial dose should not exceed 0.5 mg. per kilogram of body weight; the later doses should average between 0.5 mg. and 1.0 mg. per kilogram of body weight.

E. R. SQUIBB & SONS

Ampuls Clorarsen: 45 mg. and 67 mg. Each ampul contains the stated quantity of dichlorophenarsine hydrochloride admixed with three and one half times its weight of a mixture containing sodium citrate 96 parts and sodium carbonate 4 parts.

Ampuls Clorarsen: 0.45 Gm. and 0.67 Gm. multiple dose containers. Each ampul contains the stated quantity of dichlorophenarsine hydrochloride admixed with three and one half times its weight of a mixture containing sodium citrate 96 parts and sodium carbonate 4 parts.

PHEMEROL CHLORIDE.—[p-(2-methyl-4,4-dimethyl pentano-2) (phenoxy-ethoxy-ethyl)] dimethyl benzyl ammonium chloride monohydrate.—$C_{27}H_{42}O_2$ NCL.H_2O M.W.466.09. Phemerol chloride has the following structural formula:



Actions and Uses.—Tincture Phemerol 1:500 and Solution Phemerol 1:1,000 (aqueous) are proposed as general purpose germicides and antiseptics.

Dosage.—Both the Tincture and the Solution are used full strength except in the nose and eye. For use in the nose and eye only the solution should be used, diluted with four parts of water.

Tests and Standards.—

Phemerol chloride appears as colorless, odorless crystals possessing a very bitter taste. It may be recrystallized from a chloroform solution, by the addition of ether, in the form of very thin plates, which may assume a hexagonal shape. These crystals possess a high birefringence, parallel extinction and positive elongation and are biaxial with refractive indexes of 1.580 and 1.560. These crystals and the original material sinter slightly on the hot stage at 120 C. and melt at 164-166 C. The p_H of a 1 per cent solution of phemerol chloride is between 4.8 and 5.5.

Mineral acids and many salt solutions precipitate phemerol chloride from solution, more concentrated than 2 per cent, as an oil which crystallizes on drying and has the same properties as phemerol chloride. A solution of phemerol chloride yields a flocculent white precipitate with soap solutions. To 1 cc. of a 1 per cent solution of phemerol chloride add 2 cc. of ethanol, 0.5 cc. of dilute nitric acid and 1 cc. of silver nitrate solution: a flocculent white precipitate appears, which is insoluble in dilute nitric acid but soluble in dilute ammonia water.

Dissolve 0.1 Gm. of phemerol chloride in 1 cc. of sulfuric acid, add 0.1 Gm. of sodium nitrate and heat on the steam bath for three minutes. Dilute the solution to 10 cc., add 0.5 Gm. of granulated zinc and warm for ten minutes. Cool, add 0.2 Gm. of sodium nitrite to 1 cc. of the clear liquid and add this mixture to 0.02 Gm. of G salt (sodium 2-naphthol-6,8-disulfonate) in 1 cc. of ammonium hydroxide: the solution turns orange-red and a brown precipitate may appear.

Transfer approximately 1 Gm. of phemerol chloride, accurately weighed, to a tared platinum dish and dry in an oven at 100 C. to constant weight: the loss in weight is not less than 3.5 nor more than 4.2 per cent. Ignite the residue: the weight of ash is not more than 0.1 per cent.

Transfer approximately 2 Gm. of phemerol chloride, accurately weighed, to a 100 cc. flask; dissolve in 30 cc. of water; add 10 cc. of nitric acid and 50 cc. of tenth-normal silver nitrate; dilute to the mark, mix well and filter through a dry paper. To 25 cc. of the filtrate add 1 cc. of 10 per cent ferric ammonium sulfate and titrate with tenth-normal ammonium thiocyanate: the chloride content is not less than 7.6 nor more than 8.0 per cent, calculated to the dried substance.

Transfer an accurately weighed sample of phemerol chloride to a kjeldahl flask and digest with sulfuric acid in the presence of selenium; cool, dilute with water, make alkaline with sodium hydroxide, distill the ammonia into the standard acid solution and titrate the excess acid: the nitrogen content is not less than 2.6 nor more than 3.1 per cent.

Dissolve approximately 5 Gm. of phemerol chloride, accurately weighed, in water to make 100 cc. of solution. Transfer exactly 5 cc. of this solution to a 100 cc. flask, add 5 cc. of buffer solution (260 Gm. of sodium acetate and 250 cc. of 36 per cent acetic acid mixed with water to make 1 liter) and 50 cc. of 0.00667 molar potassium ferricyanide (prepared by dissolving 2.1948 Gm. of potassium ferricyanide in water to make 1 liter and standardized against 0.01 normal sodium thiosulfate). After mixing well, allow the mixture to stand for one hour and filter through dry No. 1 Whatman paper. Discard the first 20 cc. and to the next 50 cc., accurately measured, add 5 cc. of 10 per cent potassium iodide solution and 5 cc. of diluted hydrochloric acid. After one minute add 10 cc. of 10 per cent zinc sulfate solution and titrate with 0.01 normal sodium thiosulfate, using starch as an indicator: the percentage of phemerol chloride calculated as the monohydrate is not less than 97 per cent nor more than 103 per cent of the original substance. The percentage of phemerol chloride monohydrate = ([cc. of 0.00667 M $K_3Fe(CN)_6$—3/2 × cc. of 0.01 N $Na_2S_2O_3$] × [9.326 × 40/wt. of sample]).

The reactions involved are as follows:

$K_3Fe(CN)_6 + 3\ C_{27}H_{42}O_2N\ Cl \rightarrow (C_{27}H_{42}O_2N)_3\ Fe(CN)_6 + 3\ KCl.$

$2\ K_3Fe(CN)_6 + 2KI \rightarrow I_2 + 2K_4Fe(CN)_6.$

PARKE, DAVIS & COMPANY

Tincture Phemerol 1:500 and Solution Phemerol 1:1,000: 30 cc., 120 cc., 480 cc. and 3,840 cc. bottles.

U. S. Patent 2,115,250 (expires April 26, 1955). U. S. trademark: 305,545.

MENADIONE (See New and Nonofficial Remedies, 1944, p. 638).

The following dosage form has been accepted:

MEAD JOHNSON & CO., EVANSVILLE, IND.

Capsules Menadione: 1 mg.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 16, 1944

THE HISTORY OF PENICILLIN

Recently the *British Medical Journal* said editorially [1] that the history of penicillin is essentially the story of three distinct developments: "The first was Fleming's discovery;[2] the second was the victory of Florey and his colleagues, who showed how to obtain penicillin in a relatively pure form and who demonstrated its clinical use";[3] the third "victory," the editor generously points out, lies in the American success in large scale production of the drug. Sir Howard Florey [4] in the same issue of the *British Medical Journal* gives a detailed survey of the development of penicillin studies. He mentions that in 1877, prior to Fleming's disclosure, Pasteur and Joubert [5] had observed that cultures of anthrax ceased to grow when contaminated with air bacteria; this, Florey believes, was the first evidence that a substance produced by one organism is capable of arresting the growth of another. In the years that followed, many other "antibiotics" were discovered; one, an extract from Bacillus pyocyaneus, was placed on sale in Germany in 1930 as an unguent for local application to the skin lesions arising from anthrax.[6]

After noting conspicuous inhibition of growth in a colony of staphylococcus contaminated by mold, Fleming subcultured the mold in broth and found that a strong antibiotic, nontoxic to animals, passed into the broth from the mold;[2] the mold was later identified by Thom in this country as Penicillium notatum, and Fleming designated the antibiotic agent "penicillin." He found that penicillin inhibited the test tube growth of many gram positive bacteria known to be highly pathogenic to man; he also noticed that his penicillin-containing broth did not disturb white blood cells; on applying the solution to several clinical cases of local skin infection he reported [4] that the results "appeared to be superior to dressings containing potent chemicals." Several years later Clutterbuck, Lovell and Raistrick,[7] stimulated by Fleming's study, attempted to extract penicillin, but their efforts were largely unsuccessful; they concluded that the penicillin was too "labile" to be of clinical use. In this conclusion Sir Alexander Fleming reluctantly concurred. If one may judge by his published work, Fleming then abandoned further study of the agent until 1941,[8] except as he used it for differential culture.[9]

The successful isolation of penicillin, the clearcut proof of its clinical usefulness, its assay and dosage, as well as the mode of its excretion from the body are credited to Howard Florey and his resourceful associates at Oxford. In 1929, the year of Fleming's first paper, Florey began work on lysozyme,[10] an antibiotic discovered by Fleming in 1922 and ultimately crystallized by Roberts in 1937.[11] During the next ten years Florey continued his study of various antibiotics, firm in the conviction that one nontoxic to human beings would be found which would be of value in treating human infections. The discovery of the clinical effectiveness of penicillin was thus an outcome of a broadly conceived program of study and not an advance immediately associated with the war. Ultimately the war immeasurably expedited the development of penicillin, but during the early stages of the work wartime restrictions considerably impeded the study; for, once it had been disclosed how penicillin might be successfully extracted, it proved impossible in England (in 1940) to initiate large scale production.

Florey first directed his attention to penicillin in 1938, when he was joined by an able continental biochemist, Dr. E. Chain; between them a plan was laid for a systematic study of penicillin and other naturally occurring antibacterial agents. Drs. Florey and Chain were presently joined by Drs. E. P. Abraham, A. D. Gardner, Norman G. Heatley, M. A. Jennings, J. Orr-Ewing, A. G. Sanders, C. M. Fletcher and also by Lady Florey, a physician of competence who has been largely responsible for studying the effectiveness of penicillin applied to locally infected areas. The ultimate success of the research largely depended on the development of a reliable procedure for assay. The test adopted was worked out by the microchemist of the team, Dr. Norman Heatley, and consisted in determination of the rate of inhibition of growth of a standard bacterial culture. Through the use of an ingenious extraction method involving the passing of impure acid penicillin broth from a watery solution into an organic solvent (ether or amyl acetate) and the subsequent passing of the purified agent again into water (shaken with alkali), they obtained sufficient penicillin for clinical trial. The

1. Brit. M. J. **2**: 186 (Aug. 5) 1944; Brit. M. Bull. **2**: 4 (Jan.) 1944.
2. Brit. J. Exper. Path. **10**: 226 (June) 1929.
3. Lancet. **2**: 226 (Aug. 24) 1940.
4. Brit. M. J. **2**: 169 (Aug. 5) 1944.
5. Compt. rend. Acad. d. Sc. **85**: 101, 1877.
6. Ztschr. f. Hyg. u. Infektionskr. **31**: 1, 1899.
7. Biochem. J. **26**: 1907 (Nov.) 1932.
8. Nature, London **148**: 757, 1941.
9. Fleming writes "I have used penicillin constantly since 1929 for differential culture but its use for practical therapeutic purposes remained in abeyance until the Oxford workers started their investigation" (Brit. M. Bull. **2**: 5 [Jan.] 1944).
10. Brit. J. Exper. Path. **11**: 251 (Aug.) 1930.
11. Quart. J. Exper. Physiol. **27**: 89, 1937.

first patient was treated on Feb. 12, 1941; the response was dramatic, but the supply of penicillin ran out and shortly thereafter the patient had a relapse and died. As might have been expected, the Oxford team encountered difficulty in obtaining suitable cases for clinical trial, and patients eventually turned over to them were generally moribund with advanced septicemia. By June 1941 6 such patients had been treated intravenously; all had responded, but 2 had died when the penicillin supply became exhausted.[12]

Undeterred by difficulties and an apathy that would have caused many to abandon the work until after the war, Florey, accompanied by Dr. Heatley, came to this country in July 1941 under the auspices of the Rockefeller Foundation, requesting that the National Research Council in Washington lend a hand in the medical study of penicillin, and more particularly in the attack on the problem of production. Through the foresight of Ross G. Harrison, chairman of the National Research Council, Florey was put in touch at once with the fungus laboratories of the Department of Agriculture, and through the cooperation of Dr. Coghill, director of the Fermentation Division of the Department of Agriculture's research laboratory at Peoria, new methods were worked out for increasing yield; within a few months large scale production of penicillin was begun by a group of enterprising American drug houses. The earliest patient to be studied in this country under the auspices of the Office of Scientific Research and Development was first treated with penicillin on March 14, 1942 in New Haven, Conn., an advanced case of hemolytic streptococcus septicemia, which responded most dramatically to the drug.[13]

Dr. Florey had returned to England in September 1941. Dr. Heatley remained in this country for some twelve months to assist in the negotiations for the large scale production of the drug; during this time Heatley rendered invaluable assistance in supervising assay of the early yields. Professor Florey devoted the following year (1942) to studying ways of purifying penicillin and, in association with Lady Florey, conducted a highly significant investigation on local application of penicillin; since supplies were still low there was too little available for general administration.[14] In the summer of 1943 Florey and Brigadier Hugh Cairns, consulting neurosurgeon to the Royal Army Medical Corps, were sent to North Africa by the British War Office to study the uses of penicillin in war wounds. They returned three months later with a radical report which insisted[15] that open flesh wounds and wounds of the head can be safely and tightly closed if dealt with early, provided penicillin solution is administered locally in the wound after thorough débridement. Their initial experience has been strongly vindicated during the past year by other British medical officers as well as by medical officers of our own Army and Navy. To quote a conservative report,[16] "The percentage of scalp and brain wounds that heal by primary union has always been a high one when operation is performed at special neurosurgical units. In Italy, with greater infectivity of the terrain, this standard tended to deteriorate whenever penicillin was in short supply but was maintained when penicillin-sulfathiazole powder was insufflated to surface wounds and into depths of brain." Less conservative, but not less significant, is Florey and Cairns' original statement[15] that of 171 recent (three to twelve days) soft tissue wounds 104 closed by primary union, 60 closed with some degree of granulation and 7 were classified as failures. "None of the patients," they add, "in this series has been placed in danger [i. e. there were no fatalities]. This is a remarkable fact when we consider that the wounds closed included large and purulent wounds of the worst type—for example, large buttock wounds infected with hemolytic streptococci and clostridia. Only once was it necessary to release the stitches; this was in a penetrating chest wound and cellulitis of the chest wall. . . . Cases with complete union (104) call for no comment. In cases with subtotal union (60) the gaping area usually healed rapidly by granulation. The failures (7) occurred in the early stages of the investigation and could usually be attributed to errors in technique of skin closure and rarely to persistence of pyogenic cocci. These patients came to no harm, and the attempt at closure did not interfere with their healing by granulation." A wound which heals by primary intention requires three weeks; if granulation occurs, six to twelve weeks may elapse. The military significance of this is too obvious to require comment. Indeed, many have come to feel that penicillin will transform our entire concept of management of wartime injuries, and it will no doubt have a similarly far reaching effect on civilian traumatic surgery.

Sir Howard Florey had scarcely returned from North Africa when he was summoned early in 1944 to Moscow, where he was able to give our Soviet allies first hand information concerning penicillin, particularly with regard to local administration in war wounds; on his return from the Soviet Union, Australia, the country of his birth, requested his counsel.

The *British Medical Journal* gives deserved and generous credit to Dr. A. N. Richards, chairman of the Committee on Medical Research, and to the Office of Scientific Research and Development for sponsoring the medical aspects of the penicillin program in this country. One can only add that part of Dr. Richards' wise direction of the program lay in his fortunate selection of the Division of Medical Sciences of the National Research Council working through the Committee on

12. Lancet **2**: 177 (Aug. 16) 1941.
13. Tr. A. Am. Physicians, to be published; Yale J. Biol. & Med. **15**: 507 (Jan.) 1943.
14. Lancet **1**: 387 (March 27) 1943.
15. Florey, H. W., and Cairns, Hugh: A Preliminary Report to the War Office and the Medical Research Council on Investigation Concerning the Use of Penicillin in War Wounds [London], War Office (A. M. D. 7), October 1943.
16. Brit. M. J. **2**: 1 (July 1) 1944.

Chemotherapeutic and Other Agents with its succession of able chairmen (Col. Perrin Long until July 1942 and thereafter Dr. Chester S. Keefer) as the official body responsible for supervising and directing both the formidable production schedule and the various research projects, two of the most significant of which were reported upon in last week's number of THE JOURNAL. The story of penicillin will long exemplify the highest traditions of medical research and, incidentally, the rich fruits of a sound international cooperation in wartime.

THIOUREA AND THIOURACIL IN TREATMENT OF THYROTOXICOSIS

After a study of the life cycle of persons with thyrotoxicosis, Fitz [1] concluded that the operative treatment of toxic goiter is generally successful but that the ultimate result is uncertain. The removal of the thyroid interrupts a vicious circle but does not reach the fundamental cause of the disorder; thus it is not a curative procedure. Two complications following operation are so frequently encountered as to be a definite hazard—the development of hypothyroidism or of recurrences.

The recent discoveries reported by the MacKenzies and McCollum [2] and Astwood [3] point to the inhibition of function in an endocrine gland by the administration of certain chemical compounds. The MacKenzies, while investigating the possibility that sulfaguanidine, when fed to rats on a purified diet containing synthetic B vitamins, might prevent the synthesis of additional essential nutrients by the intestinal flora, observed that animals which received the drug for periods varying from six weeks to sixteen weeks showed without exception hypertrophy and hyperemia of their thyroid glands. The glands were from three to eight times larger than those of control animals which received the same diet without sulfaguanidine. The thyroid hypertrophy was accompanied by a definite fall in the basal metabolic rate. Both these changes were prevented or cured by administration of thyroxin but not by increasing the iodine content of the diet. At about the same time Richter and Clisby observed enlargement of the thyroid associated with loss of weight and other toxic reactions in rats fed phenyl thyourea in their drinking water. Accompanying this increase in weight of the thyroid, microscopic changes characterized by the continued heightening of the acinar epithelium and its encroachment on the concomitantly diminishing and vacuolated colloid were observed. The basal metabolic rate in adult rats which received sulfaguanidine for five to seven days dropped 10 per cent; by the tenth to the fourteenth day it was —20 per cent, a level which was maintained to the end of the experiment at forty days. Addition of vitamin C and para-aminobenzoic acid enhanced the thyroid effect of sulfaguanidine. The addition of sodium iodide did not interfere with the thyroid effect of sulfaguanidine. In contrast with the foregoing results desiccated thyroid and thyroxin, when added to the diet, entirely prevented the thyroid enlargement and the microscopic changes. Kennedy found that oral administration of allyl thiourea to rats produced not only thyroid hyperplasia but an alteration of the cellular pattern of the anterior pituitary as well. Gersh and his associates established that the presence of the hypophysis is essential for the production of thyroid hyperplasia and hypertrophy by sulfaguanidine. They concluded that the sulfonamides and thioureas probably exert a depressing influence primarily on the functional activity of the thyroid and hence on the basal metabolic rate, and that thyroid hyperplasia is a reflection of increased pituitary activity resulting from the depression of thyroid function.

Astwood [3] repeated these experiments and found that the hypertrophied glands rapidly regressed toward a normal condition on the cessation of treatment. Vascularity quickly decreased, the epithelium became flattened, colloid accumulated, and the size of individual follicles and the total size of the glands decreased. These retrogressive changes occurred fully as rapidly as the hyperplasia. Astwood likewise found that hypophysectomized rats did not develop thyroid hyperplasia on a 2 per cent sulfaguanidine diet. In spite of the histologic picture of overactivity these animals did not present signs of hyperthyroidism; in fact, after a variable period of time the animals whose thyroids were hyperplastic began to exhibit distinct signs of hypothyroidism; that is, subnormal growth and development, lessened food intake and lowered basal oxygen consumption. The coexistence of thyroid hyperplasia and a lowered rate of metabolism suggested that the drug either exerted an action which inhibited the normal effect of the thyroid hormone on tissues in general or else that it interfered in some way with the adequate production of normal thyroid hormone. In either case the goiter would be the result of a compensatory hyperplasia which could not completely make up for the induced deficit. The mechanism of the goitrogenic action of these substances apparently resides in an interference with the synthesis of the thyroid hormone. The mode of action of these drugs, according to Astwood, appears to be an interference with the enzymatic synthesis of thyroid hormone. The exact site of block is still not known, but it is definitely established that the thyroid is rendered incapable of utilizing iodine for these processes. The resultant thyroid insufficiency leads via anterior pituitary stimulation to an ineffectual hyperplasia of the thyroid acinar cells. Of

1. Fitz, Reginald: A Panoramic View of Thyrotoxicosis, J. A. M. A. **125**: 943 (Aug. 5) 1944; A Panoramic View of Thyrotoxicosis, ibid. **125**: 1026 (Aug. 12) 1944.

2. MacKenzie Julia B.; MacKenzie, C. G., and McCollum, E. V.: The Effect of Sulfanilylguanidine on the Thyroid of the Rat, Science **94**: 518 (Nov. 28) 1941. MacKenzie, C. G., and MacKenzie, Julia B.: Effect of Sulfonamides and Thioureas on the Thyroid Gland and Basal Metabolism, Endocrinology **32**: 185 (Feb.) 1943.

3. Astwood, E. B.; Sullivan, J.; Bissell, Adele, and Tyslowitz, R.: Action of Certain Sulfonamides and of Thiourea on the Function of the Thyroid Gland of the Rat, Endocrinology **32**: 210 (Feb.) 1943.

more than a hundred compounds investigated by Astwood [4] 2-thiourea was found to be the most highly active. The minimal lethal dose of this substance for rats was more than a hundred times the dose necessary to produce a detectable thyroid effect. Thiourea and thiouracil appear to be the most promising. There appears to be a variable latent period following the initiation of treatment before the metabolic rate begins to fall and a similar though somewhat shorter period before clinical improvement is subjectively and objectively apparent.

Astwood [5] administered to 3 patients with thyrotoxicosis thiourea in doses of 1 to 2 Gm. per day or of thiouracil in doses of 0.2 to 1 Gm. with a resulting relief of symptoms and a return to normal of serum cholesterol and the basal metabolic rate. A latent period of one to two weeks occurred before a sustained improvement during treatment and a return of hyperthyroidism when therapy was discontinued. One of the patients developed agranulocytosis on the thirty-seventh day of therapy but recovered in seven days on withdrawal of the drug. Himsworth [6] administered thiourea or thiouracil to 6 patients with thyrotoxicosis, and the results were as striking as those of Astwood. He did not observe any toxic effects of the drug. Williams and Bissell [7] found that thiouracil is rapidly absorbed and is rapidly excreted. They treated 9 thyrotoxic patients with thiouracil and noted clinical improvement, which continued until all the symptoms disappeared within four to seven weeks. The basal metabolic rate fell progressively downward. The enlargement of the thyroid associated with thiouracil treatment which occurred in 3 of their patients and the increase in the pathologic state of the eyes in 1 patient suggest that in human beings, as in animals, thiouracil leads to excess thyrotropic hormone activity. Rawson and his collaborators [8] administered thiouracil to 19 patients with toxic diffuse goiter. They report lowering of the basal metabolic rate, relief of symptoms, increase of hyperplasia of the thyroid with loss of colloid and increase in vascularity and in some instances increased lymphoid hyperplasia. They have also noted a decreased avidity for iodine by the thyroid gland, as shown by greatly impaired correlation of radioactive (tracer) inorganic iodine, with increased elimination in the urine. Impairment in the physiologic activity in the thyroids of persons treated with the drug was seen when tested on patients with myxedema. In patients previously treated with iodine the thyroid effects were delayed. They conclude that these facts are consistent with the theory that thiouracil acts by preventing or blocking the utilization of iodine in the synthesis of thyroid hormone within the thyroid gland. Apparently, under the influence of thiouracil new active thyroid hormone is produced. Cessation of active thyroid hormone production is believed to stimulate the thyrotropic activity of the pituitary, and this in turn causes further hyperplasia of the thyroid, which however does not overcome the thiouracil block to active thyroid hormone production. Paschkis and his collaborators [9] treated 21 cases of thyrotoxicosis with thiourea or thiouracil. Improvement was usually noticed after four to six days of treatment, with complete suppression of thyrotoxic manifestations after two to three weeks. One gram of thiouracil was effective in most cases. The drug proved particularly valuable in cases in which operation was deemed inadvisable. An attempt was made to establish a permanent dosage level rather than to employ intermittent treatment. After full effect was achieved, doses as small as 0.1 to 0.2 Gm. proved satisfactory. Myxedema developed in 2 cases and subsided after the drug was temporarily discontinued. Toxic manifestations from thiouracil consisting of skin eruptions, fever, arthralgia, leukopenia and jaundice were observed in 3 cases.

Gabrilove and Kert [10] treated 9 patients, 3 of whom developed toxic effects. One patient developed fever, general lymphadenopathy and skin eruption. Another patient presented fever and skin eruption, while the third patient showed moderate leukopenia. St. Johnston [11] administered thiourea for thyrotoxicosis to 3 patients and reports that all 3 developed toxic symptoms which were strikingly similar. The symptoms consisted of pyrexia from 101 to 104 F., occurring eight to ten days after administration of the drug, mild leukopenia with monocytosis, and a maculopapular eruption.

Elsewhere in this issue (page 153) Reveno reports 9 cases of toxic adenoma treated with thiouracil. Six showed a satisfactory response, while 3 were failures. One of the latter patients had diabetes and had been taking iodine for six years. The second responded favorably at first but developed a hemorrhage into the gland and thyroidectomy was done. The third was a patient who, while showing some clinical improvement, failed to show a drop in basal metabolic rate during the short period under observation.

Whether or not thiouracil will prove to be a satisfactory substitute for surgical treatment of toxic goiter cannot be stated on the basis of present limited experience. The drug promises to be of great value in cases in which operation is inadvisable or contraindicated.

4. Astwood, E. B.: The Chemical Nature of Compounds Which Inhibit the Function of the Thyroid Gland, J. Pharmacol. & Exper. Therap. **78**: 79 (May) 1943.

5. Astwood, E. B.: Treatment of Hyperthyroidism with Thiourea and Thiouracil, J. A. M. A. **122**: 78 (May 8) 1943.

6. Himsworth, H. P.: Thyrotoxicosis Treated with Thiourea, Lancet **2**: 465 (Oct. 16) 1943.

7. Williams, Robert H., and Bissell, Grosvenor W.: Thiouracil in the Treatment of Thyrotoxicosis, New England J. Med. **229**: 97 (July 15) 1943.

8. Rawson, Rulon W.; Evans, R. D.; Means, J. H.; Peacock, W. C.; Lerman, J., and Cortell, R. E.: The Action of Thiouracil on the Thyroid Gland in Graves' Disease, J. Clin. Endocrinol. **4**: 1 (Jan.) 1944.

9. Paschkis, K. E.; Cantarow, A.; Rakoff, A. E.; Walkling, A. A., and Tourish, W. J.: Thiourea and Thiouracil in Treatment of Thyrotoxicosis, J. Clin. Endocrinol. **4**: 179 (May) 1944.

10. Gabrilove, J. L., and Kert, M. J.: Sensitivity to Thiouracil, J. A. M. A. **124**: 504 (Feb. 19) 1944.

11. St. Johnston, C. R.: Toxic Reaction to Thiourea: Report on 3 Cases, Lancet **2**: 42 (July 8) 1944.

Current Comment

NEUROFIBROMATOSIS AND OSTEITIS FIBROSA CYSTICA

An extensive study and reevaluation of the apparent relations of neurofibromatosis (von Recklinghausen) and osteitis fibrosa cystica has been presented recently by Thannhauser.[1] On the basis of reports of simultaneous occurrence of nodular cutaneous neurofibroma, pigmented areas of the skin and osteitis fibrosa cystica in a single patient, a coherence of neurofibromatosis and osteitis fibrosa cystica is suggested, since the occurrence of these symptoms of two rare diseases in one person is not likely to be mere coincidence, Thannhauser says. Fibrocystic involvement of localized areas of the skeleton, especially the long bones, occurs in neurofibromatosis together with café au lait spots and cutaneous neurofibromas. Although microscopic examination of the osseous fibroma does not reveal nerve structures within the fibroma, whorls of spindle cells are occasionally found and may be considered to reflect its neurofibromatous origin. Thannhauser believes that hyperpigmented areas are the expression of underlying neurofibromatosis even without the appearance of neurofibromatous nodules. The presence of similar endocrine symptoms, especially the concurrence of precocious puberty and pigmented blotches of the skin in neurofibromatosis and also in osteitis fibrosa cystica disseminata offers additional corroboration of the belief that the two disturbances are related. The implication is strong that the anatomic structures which underlie the endocrine symptoms in cases of simple neurofibromatosis are the same as those of osteitis fibrosa cystica disseminata.

SYNTHESES IN THE INTESTINE

The first demonstrations of vitamin K deficiencies were made with chicks as experimental animals. In this species the failure to produce prothrombin through lack of vitamin K can be brought about by dietary adjustment alone. Later similar experiments were carried out with canaries, pigeons and ducks. Ordinary laboratory mammals—dogs, mice, rats—do not readily show a reduction in prothrombin level in the blood when restricted to experimental rations lacking vitamin K. However, if sulfanilylguanidine and succinylsulfathiazole are added to these diets, hemorrhages can be produced in rats.[1] In a recent study Daft and his co-workers [2] have extended the list of sulfonamides used and have shown that when the hemorrhages occur there appears also a severe hypoprothrombinemia. At a level of 1 per cent in the diet sulfapyrazine, sulfadiazine and sulfathiazole were much more effective in this respect than were sulfaguanidine, sulfanilamide and succinylsulfathiazole. The fact that the order of effectiveness of the sulfonamide drugs in producing the vitamin K deficiency is much like that observed in their bacteriostatic action on Escherichia coli, together with the observation that this group of organisms is particularly active in the synthesis of vitamin K, emphasizes anew the point of view that various types of intestinal bacteria exert a beneficent influence. The synthesis of vitamins of the B complex group, early reported in experimental animals, was recently [3] cited again as a contributing factor in human nutrition, and attention has been called to the possibility of amino acid production by these organisms.[4] Further investigation will doubtless reveal other ways in which this symbiotic activity in the intestine is of value to the host.

1. Thannhauser, S. J.: Neurofibromatosis (von Recklinghausen) and Osteitis Fibrosa Cystica Localista et Disseminata (von Recklinghausen), Medicine **23**: 105 (May) 1944.

1. Daft, F. S.; Ashburn, L. L., and Sebrell, W. H.: Science **96**: 321 (Oct. 2) 1942.

2. Kornberg, A.; Daft, F. S., and Sebrell, W. H.: Pub. Health Rep. **59**: 832 (June) 1944.

3. Najjar, V. A., and Holt, L. E., Jr.: The Biosynthesis of Thiamine in Man, J. A. M. A. **123**: 683 (Nov. 13) 1943.

4. Martin, G. J.: Proc. Soc. Exper. Biol. & Med. **55**: 182 (March) 1944.

DIET AS PREDISPOSING FACTOR IN RHEUMATIC FEVER

In a recent report by Peete [1] observations are summarized on patients seen in clinic and private practice over a four year period who showed any signs of rheumatic fever or rheumatic heart disease. The patients were given a list of foods with instructions to check after each meal all the foods eaten and to write in any additional ones taken which did not appear on the list. The survey included a comparison of the dietetic habits of 50 patients, some with acute and some in the chronic state of rheumatic fever, as compared with 25 normal school children. A comparative study showed that the average diet of the rheumatic patient was low in those foods which supply vitamins A and D and minerals, especially calcium, phosphorus and iron. Some deficiency in proteins and an excessive intake in starchy foods and refined sugars also was apparent. The diets of both groups showed a restricted use of eggs. It was significant, Peete believed, that the average number in families of 75 rheumatic patients was 7.5 members per family, whereas the average in the control group of better economic status was 4.5. Among the conclusions of this study were that the incidence of acute rheumatic fever and rheumatic heart disease increases as exposure to the sun decreases; few recurrences of active infection developed when families cooperated satisfactorily in the correction of the deficient diet and in addition of cod liver oil to these diets; poor dietary habits were found among those even with adequate financial means. Finally, this investigator felt that the deficiency leading to the development of rheumatic infection closely follows the incidence of clinical rickets and that it alters immunity to the infective organism that produces the clinical picture of acute rheumatic fever. He emphasizes the importance of adequate amounts of vitamins A and D, milk, protein and sun bathing in the prophylaxis and prevention of recurrences of this disease. The conclusions expressed should be accepted with reserve. The genesis of rheumatic fever has not yet been explained: most features of the disease would appear to label it as due to a specific agent not yet identified, although numerous precipitating or predisposing factors presumably occur, among which diet may be included.

1. Peete, Don Carlos: Rheumatic Fever: Diet as a Predisposing Factor, Ann. Int. Med. **21**: 44 (July) 1944.

MEDICINE AND THE WAR

ARMY

REORGANIZE AIR SURGEON'S OFFICE

The War Department recently announced the partial reorganization of the Air Surgeon's office and reassignment of key officers of the Medical Service, Army Air Force. Brig. Gen. Charles R. Glenn, surgeon of the Army Air Force Training Command, was assigned deputy air surgeon on the staff of Major Gen. David N. W. Grant, the Air Surgeon, effective August 15. He succeeded Col. Walter S. Jensen, who has been assigned to an important post overseas. Other new assignments include those of Col. Henry C. Chenault, executive officer, who has been named director of professional services, Col. Oliver K. Niess, base surgeon and commanding officer of the Regional State Hospital, Mitchel Field, N. Y., who has been named director of administration, and Col. Richard L. Meiling, who will act as special assistant to the Air Surgeon.

The reorganization places the Director of Administration over the Operations, Personnel and Supply Divisions, while the Director of Professional Services will supervise the Professional, Aviation Medicine, Convalescent Training, Research and Statistics Division. Two divisions have received new designations. The Medical Services Division will be called the Professional Division, and the former Professional Division will be known as the Aviation Medicine Division.

The status of the division chiefs remains unchanged. The chiefs are Col. George L. Ball, Aviation Medicine Division; Col. Howard A. Rusk, Convalescent Training Division; Col. George F. Baier III, Operations Division; Col. E. L. Gann, Personnel Division; Col. William P. Holbrook, Professional Division; Col. Lloyd E. Griffis, Research Division; Col. Joseph Berkson, Statistics Division; Col. Gustave E. Ledfors, Supply Division, and Major William H. Perkins, Office Services.

36TH GENERAL HOSPITAL UNIT COMMENDED

The 36th General Hospital unit, organized under the auspices of the Wayne University College of Medicine, Detroit, and staffed by Detroit and Michigan men and women, has been commended by the commanding officer of Headquarters Peninsular Base Section in Italy. The 36th General Hospital was stationed at Naples during the early months of the Italian campaign. The quarters it occupied, however, have now been returned to Italian civilians, and the unit, recently detached from the Peninsular Base Section, expects immediate assignment to another war area. Dr. Edgar H. Norris, dean of Wayne University College of Medicine, made this information public on receipt of a letter from Lieut. Col. Wyman C. C. Cole, formerly of Detroit, who is medical director of the 36th General Hospital. The commendation, dated August 16, came to Colonel Cole from Col. Richard T. Arnest, surgeon, Headquarters Peninsular Base Section, and read as follows:

"Upon the separation of your organization from the Peninsular Base Section I wish to express to you, your officers, nurses and enlisted personnel my sincere appreciation of the excellent performance of your various duties while assigned to this base.

"It has indeed been a pleasure to have your organization with this command and I regret your separation from the Peninsular Base Section. The professional ability and untiring devotion to duty of the members of your organization have done much to add to the comfort and well being of casualties admitted to your hospital. You should each be justly proud of a task well done."

The 36th General Hospital unit has been overseas for eighteen months. It was organized under the auspices of Wayne University College of Medicine by authority of the Secretary of War, and its roster includes 52 physicians, 105 nurses and about 500 enlisted personnel. Virtually all of these are from Detroit and Michigan.

REGISTRY OF VETERINARY PATHOLOGY ESTABLISHED

Recently an arrangement was approved by the Surgeon General of the U. S. Army and the board of governors of the American Veterinary Medical Association for the establishment and maintenance at the Army Institute of Pathology, Army Medical Museum, Washington, D. C., of a Registry of Veterinary Pathology. This registry will become a unit of the American Registry of Pathology, an organization operating by the authority of the Surgeon General under the sponsorship of the National Research Council. Material submitted should be addressed to Director, Army Institute of Pathology, Army Medical Museum (attention Registry of Veterinary Pathology), 7th and Independence Avenue S.W., Washington 25, D. C. The director will be glad to furnish further instructions to contributors for submission of material to the Registry of Veterinary Pathology. The members of the Special Committee on Registry of Veterinary Pathology are W. H. Feldman, Mayo Foundation, chairman; Capt. Charles L. Davis, V. C., Army Institute of Pathology; Harry W. Schoening, chief, Pathological Division, U. S. Bureau of Animal Industry, and, member ex officio, Lieut. Col. Balduin Lucké, M. C., deputy director, Army Institute of Pathology.

WHOLE BLOOD SHIPPED TO FRANCE

The first shipment of whole blood from the United States to soldiers wounded in France was made by the U. S. Army Medical Department by an army plane, August 21. Daily shipments have been made since, 250 pints a day the first week and 500 pints a day the second week; 750 pints a day will be shipped soon. Type O blood is being collected by the Red Cross for the shipments in response to appeals from Major Gen. Norman T. Kirk, Surgeon General of the Army, and Rear Admiral Ross T. McIntyre, Surgeon General of the Navy. The whole blood is prepared for shipment on the day it is drawn, and twenty-one hours after it leaves the United States it is available for transfusion in France. Brig. Gen. F. W. Rankin and Col. B. N. Carter of the Surgical Consultant Division with Lieut. Col. Douglas B. Kendrick, consultant to the Surgeon General on transfusions and plasma, developed the program for the Army Medical Department, and new developments in the preservation and refrigeration of whole blood were worked out to make the plan effective.

ARMY AWARDS AND COMMENDATIONS

Major Henry T. Earhart

The Bronze Star Medal was recently awarded to Major Henry T. Earhart, formerly of Mulberry, Ind. The citation accompanying the award read "At Hollandia, Dutch New Guinea, from April 26 to May 18, 1944 he was outstanding in performance of duty in a place of great responsibility as surgeon of a signal battalion. By his conspicuous efficiency above and beyond the regular call of duty he rendered invaluable service in the handling of the sick, injured and wounded men from a command of over 600 men, with a very limited number of Medical Department personnel." Dr. Earhart graduated from Indiana University School of Medicine, Indianapolis, in 1939 and entered the service March 21, 1941.

Colonel Edgar C. Jones

The Legion of Merit Award was recently presented to Col. Edgar C. Jones, McConnelsville, Ohio, for "service as assistant surgeon, Fifth Corps Area, surgeon, Fifth Corps Area, and later as chief of the Medical Branch and Surgeon Fifth Service

Command, during a period of expansion and reorganization from Oct. 22, 1940 to June 30, 1944. In the performance of his duties he displayed in the highest degree the qualities of intelligence, loyalty, devotion to duty, sound judgment and a thorough understanding of his mission. His contribution to the war effort has been a most effective one, rendered always with a most unselfish devotion to the Nation's welfare." Dr. Jones graduated from Jefferson Medical College of Philadelphia in 1906. He was in the regular army of the United States until Oct. 31, 1938, when he retired and returned to active duty Oct. 21, 1940.

Captain Emile G. Schuster

The Distinguished Service Cross was recently awarded to Capt. Emile G. Schuster, formerly of Oakland, Calif. The citation accompanying the award read "During the capture and defense of hill positions of Mount Patano, Italy, from Nov. 29 to Dec. 3, 1943 he gave medical aid to the wounded while under mortar and artillery fire and at times under direct machine gun and rifle fire. On one occasion he advanced in front of forward position under fire to an enemy mine field and rendered his services to men wounded by antipersonnel mines. During daylight hours he administered plasma in the midst of enemy fire. On one occasion while performing this task the flask was shot from his hand and the tree beside him cut down by machine gun fire. However, he secured more supplies and calmly continued his treatment. His fearless actions under enemy fire alleviated much suffering and saved many lives." Dr. Schuster graduated from McGill University Faculty of Medicine, Montreal, in 1940 and entered the service April 6, 1942.

Colonel Alfonso M. Libasci

The Legion of Merit Award was recently given to Col. Alfonso M. Libasci, formerly of Brooklyn, for his "resourcefulness, perseverance and ingenuity" in organizing and directing the medical supply system of the Army in the Southwest Pacific area. He was cited for his achievement in organizing a supply system by means of which medical goods were swiftly and automatically routed to combat areas. He was also credited with simplifying the accounting and requisitioning systems and with developing the portable surgical hospital unit, which saved many lives in the South Pacific island jungles. Dr. Libasci graduated from Long Island College of Medicine, Brooklyn, in 1931 and has been on active duty with the Army since 1933.

Colonel Ashley W. Oughterson

The Legion of Merit was recently awarded to Col. Ashley W. Oughterson, formerly associate professor of surgery at Yale University School of Medicine, New Haven, Conn., for "exceptionally meritorious conduct in the performance of outstanding services in the South Pacific area from Dec. 1, 1942 to June 13, 1944. Dr. Oughterson graduated from Harvard Medical School, Boston, in 1924 and entered the service in January 1942.

NAVY

NAVY AWARDS AND COMMENDATIONS

Lieutenant Samuel E. Elmore Jr.

The Silver Star Medal was recently awarded to Lieut. Samuel E. Elmore Jr., formerly of New Orleans. The citation accompanying the award read "For conspicuous gallantry and intrepidity while attached to the Third Marine Division during the landing attack at Cape Torokina, Solomon Islands, on Nov. 1, 1943. When the fighting was most desperate and many of our wounded were lying helpless within dangerous proximity to the enemy, Lieutenant Elmore unhesitatingly entered the area of the Japanese defensive position and gave expert medical attention to the injured despite an incessant rain of enemy fire. While engaged in this vital work, he was suddenly and viciously attacked by a Japanese soldier and, mindful of the need for uninterrupted medical care, engaged the enemy in hand to hand combat, killing him and thereby removing an imminent threat to the lives of the men who depended on his assistance. The professional skill and outstanding valor displayed by Lieutenant Elmore throughout this engagement inspired courage and confidence among the wounded and were in keeping with the highest traditions of the United States Naval Service." Dr. Elmore graduated from Harvard Medical School, Boston, in 1940 and entered the service in September 1942.

Commander James J. Sapero

The Distinguished Service Medal was recently presented to Comdr. James J. Sapero, now on temporary duty in the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. The citation accompanying the award read "For exceptionally meritorious service to the government of the United States in a duty of great responsibility while serving as malaria and epidemic disease control officer on the staff of the commander, South Pacific Area and South Pacific Force, from Aug. 17, 1942 to Jan. 2, 1944. Displaying exceptional medical skill and distinctive leadership, Commander Sapero conceived and developed the malaria control unit in the area and, as a result of his untiring efforts and those of his organization, the incidence of malaria among the military and naval forces was drastically reduced. The excellent principles and methods established by Commander Sapero in the control of this disease prevented a tremendous loss of manpower and served as a guide for checking the epidemic in other military areas. His brilliant initiative and outstanding ability contributed materially to the superb physical conditions and high morale of our fighting forces in this vital area." Dr. Sapero graduated from Stanford University School of Medicine, San Francisco, in 1932. He has been in the service since June 1931.

Lieutenant Arthur T. Willetts

Lieut. Arthur T. Willetts, formerly of Verona, Pa., was recently awarded the Silver Star Medal "for conspicuous gallantry and intrepidity as battalion surgeon attached to the Third Marine Division during the landing attack at Cape Torokina, Solomon Islands, on Nov. 1, 1943. On finding that perilous enemy fire was endangering the lives of our wounded men who had fallen on the beachhead, Lieutenant Willetts promptly requested a nearby assault unit to attack an adjacent enemy infested jungle area and, after the site was cleared of hostile troops, established an aid station in order to attend the injured men under cover of the jungle growth. Although his medical post was attacked by enemy machine guns six times during the day, he skilfully treated many serious wounds, consistently maintaining a calm courage which concealed from the patients under his care the danger of their situation. Lieutenant Willett's professional ability and heroic devotion to duty were in keeping with the highest traditions of the United States Naval Service." Dr. Willetts graduated from the University of Pittsburgh School of Medicine in 1937 and entered the service March 9, 1942.

EXHIBIT OF NAVAL MEDICINE AT NATIONAL GALLERY OF ART

A collection of one hundred paintings and drawings of naval medicine were put on view at the National Gallery of Art, Washington, D. C., September 10, where it will remain until October 8, after which the collection will be sent on tour throughout the United States. The artists who participated in the program and the phases of naval medicine which they covered are as follows: Hospital Corps Training, depicted by David Stone Martin and Irwin Hoffman at the Navy Medical Field Service School, Camp Lejune, North Carolina; Combat Action, depicted by Joseph Hirsch and Kerr Eby at Pearl Harbor, New Caledonia, New Guinea, Guadalcanal, Tarawa and Bougainville; and Treatment of Convalescents, depicted by Carlos Andreson and Julian Levy at the U. S. Naval Hospital, Portsmouth, Va., and National Naval Medical Center, Bethesda, Md.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At Rhoads General Hospital, Utica, N. Y., in conjunction with the Oneida County Medical Society: War Wounds of the Extremities: Clinical Demonstration, Major Robert Perlman, October 10.

At Camp McCoy, Wisconsin: Symposium on Organic Neurology, Dr. T. C. Erickson, October 4; Dermatologic Diseases, Dr. G. A. Cooper, October 18.

At Truax Field, Wisconsin: Endocrinology, Dr. Elmer L. Sevringhaus, October 4; Virus and Rickettsial Diseases, Dr. Marcos Fernan-Nunez, October 18.

In Canada the Committee on Wartime Graduate Medical Meetings is cooperating in the presentation of the Dalhousie Refresher Course, Halifax, Nova Scotia, from October 9 to 13, by sending the following guest speakers, who besides conducting clinics will present two scientific papers: "Gout" and "Diagnosis of Adrenal Insufficiency," Dr. George W. Thorn; "Cancer of the Prostate" and "Sex Hormones in Clinical Practice," Dr. Charles Huggins; "Tuberculosis in Children" and "Blood Dyscrasias," Dr. Ralph Tyson; "The Recognition and Management of the Psychoneurotic Patient" and "Some Common Psychosomatic Disturbances and Their Treatment," Dr. Thomas A. C. Rennie.

AMERICAN PHARMACEUTICAL ASSOCIATION RECEIVES AWARD FOR QUININE POOL

The War Production Board recently awarded a scroll of appreciation to the American Pharmaceutical Association on behalf of the nation's pharmacists in contributing their quinine stocks to a national pool for the armed forces. In gratitude for the more than 152,000 ounces of cinchona products collected, the government officials expressed "thanks to the pharmacists of America whose contributions made a success of the quinine pool, to the Philadelphia College of Pharmacy and Science, which first inaugurated and proved the feasibility of the pool within the commonwealth of Pennsylvania, to the personnel of the Institute of Pharmacy and to the American Pharmaceutical Association, which assumed the burden of the nationwide effort and carried it through to a commendable conclusion."

The presentation was made at the American Institute of Pharmacy by two pharmacists of the War Production Board, Fred J. Stock, chief of the Drugs and Cosmetics Branch of the Chemicals Bureau, and Henry W. Heine, chief of the Botanicals and Imports Unit of the Drugs and Cosmetics Branch of the Chemicals Bureau. The pharmacists were co-signers of the scroll with Donald M. Nelson, chairman of the War Production Board.

NEW BRITAIN GENERAL HOSPITAL LENDS PATHOLOGIST TO U. S.

Dr. H. Weston Benjamin, managing director of New Britain General Hospital, New Britain, Conn., recently announced that the board of directors acceded to a request from the Office of Scientific Research and Development Committee on Medical Research for the services of Dr. Paul D. Rosahn, pathologist in charge of laboratories at the hospital. Dr. Rosahn will act as technical aide to the committee assigned to contracts in venereal disease under the direction of the deputy division chief in charge, Dr. Joseph Earle Moore of Johns Hopkins Hospital and University. His work is primarily the supervision of studies of the effect of penicillin in syphilis now in progress under the O. S. R. D. auspices at the request of the armed forces. He will also have certain other duties in connection with the contracts entered into between the Office of Scientific Research and Development Committee on Medical Research and various universities dealing with other research problems in the field of venereal disease. Dr. Rosahn will continue to be in charge of the laboratories at New Britain General Hospital but will spend part of each week in Baltimore, Washington, New Britain and other cities where his duties associated with this new project may call him. During his absence from the hospital Dr. M. C. Winternitz, professor of pathology at Yale University, will work with Dr. Rosahn in supervising the pathologic and laboratory routines of the hospital.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, September 9, page 109)

ALABAMA

Children's Hospital, Birmingham. Capacity, 50; admissions, 1,329. Mrs. Victoria K. Willman, R.N., Superintendent (resident—pediatrics).

CALIFORNIA

St. Luke's Hospital, San Francisco. Capacity, 225; admissions, 6,678. Dr. Howard H. Johnson, Medical Director (1 intern).

ILLINOIS

St. Joseph's Hospital, Joliet. Capacity, 334; admissions, 7,354. Sister M. Henrica, R.N., Superintendent (interns).

KENTUCKY

St. Elizabeth Hospital, Covington. Capacity, 367; admissions, 5,938. Sister M. Alacoque, Administrator (1 intern).

Louisville General Hospital, Louisville. Capacity, 587; admissions, 9,805. Dr. John Walker Moore, Medical Director (1 resident—medicine; 1 intern).

MARYLAND

Johns Hopkins Hospital, Baltimore. Capacity, 1,034; admissions, 17,699. Dr. Winford H. Smith, Medical Director (1 assistant resident, 1 resident—roentgenology).

MICHIGAN

Charles Godwin Jennings Hospital, Detroit. Capacity, 108; admissions, 2,304 (3 interns, Nov. 1, 1944; 3 interns, July 1, 1945).

MINNESOTA

St. Mary's Hospital, Duluth. Capacity, 320; admissions, 9,474. Sister M. Patricia, Superintendent (interns).

St. Mary's Hospital, Minneapolis. Capacity, 340; admissions, 10,702. Sister Conchessa, Superintendent (interns).

Bethesda Hospital, St. Paul. Capacity, 180; admissions, 6,083. Rev. L. B. Benson, Superintendent (interns).

St. Joseph's Hospital, St. Paul. Capacity, 308; admissions, 10,335. Sister M. Ignatius, R.N., Superintendent (interns).

OPEN PSYCHIATRIC REHABILITATION CLINIC AT MOUNT ZION HOSPITAL

A psychiatric rehabilitation clinic for the treatment of ex-servicement and women discharged from the armed forces on account of neuropsychiatric disabilities has been established at the Mount Zion Hospital, San Francisco. The clinic will utilize both individual and group therapy and will be staffed by psychiatrists, internists, psychiatric social workers, vocational advisers and dietitians. It will be open both during the day and in the evening for the benefit of men and women who are employed in industry. A close contact will be maintained with the United States Army and Navy hospitals, the Red Cross, the United States War Manpower Commission, the State Bureau of Vocational Rehabilitation and the various social agencies of the city of San Francisco. The project was made possible by a grant from the Columbia Foundation of San Francisco. Dr. J. S. Kasanin is director of the clinic.

MERCY SHIPS

Three Netherlands liners, specially converted for the purpose, are being used as hospital ships to evacuate American wounded from the northern Netherlands New Guinea coast to base hospitals. The ships, whose white hulls have become familiar sights along the invasion beaches, are the *Maetsuycker*, the *Abel Tasman* and the *Jansen*.

ORGANIZATION SECTION

WASHINGTON LETTER

(From a Special Correspondent)

Sept. 11, 1944.

Hearings on Poliomyelitis

Use of the airplane to evacuate victims of infantile paralysis in sparsely settled states like Nevada and Wyoming is recommended by Dr. Frank R. Ober of Boston, professor of orthopedic surgery at Harvard Medical School. Dr. Ober told the Kelley committee investigating aid to the physically handicapped that excellent work is being done throughout the country in rehabilitation of patients with infantile paralysis. The war had created difficulty in getting orthopedic surgeons, but, when hostilities cease, surgeons now in the Army will be available to carry on the work more successfully, he said. Lack of publicity was one reason for failure of people to take full advantage of facilities now in existence for treatment of the disease. While expressing the view that adequate clinical facilities were now operating in such states as Massachusetts, New York and Pennsylvania, Dr. Ober admitted that sparsely settled sections are without adequate means for treatment of the disease. Asked if he thought regional clinics should be set up, he said "It seems to be that is the way to take care of it." In the early stages of poliomyelitis, Dr. Ober said, nursing is required to relieve the painful symptoms and to prevent deformities. After painful symptoms have disappeared, active methods must be applied toward restitution of the functions and improvement of muscles, which is done by physical therapy, under direction of a physician who understands the problems. Rehabilitation is complicated by the fact that treatment may be required indefinitely. Maximum recovery is within twelve to twenty-five months, yet he had seen recovery take place after thirty-five years. Dr. Ober described in detail the organizations that had been set up in Vermont and Massachusetts for the physically handicapped.

Other witnesses at the hearings on poliomyelitis were Dr. Charles Armstrong, chief of the Division of Infectious Disease, U. S. Public Health Service, Dr. A. L. Van Horn, director of the Division of Health Services, Children's Bureau, Department of Labor, and Dr. Don W. Gudakunst, medical director of the National Foundation for Infantile Paralysis.

Samuel Barker, general counsel for the committee headed by Augustine B. Kelley (Democrat, Pennsylvania) on the physically handicapped, said hearings would continue September 12 to 14 on problems of the deaf and hard of hearing.

$10,000,000 Asked for Infantile Paralysis Study

A resolution authorizing the expenditure of $10,000,000 for the study of the causes and cure of infantile paralysis has been proposed for immediate consideration by Senator Langer (Republican, North Dakota). Author of the measure, which he introduced because of the unusual prevalence of the disease in the Eastern states this year, particularly in the District of Columbia and nearby communities, Senator Langer stated that he would urge Senator Thomas (Democrat, Utah) to call a meeting of the Education and Labor Committee to get action if possible before the impending recess of Congress.

Wartime Health Program Hearings Resume

Health needs of veterans will be one of the subjects to be investigated when the second series of public hearings on the National Wartime Health Program resume September 18, 19 and 20, Senator Claude Pepper (Democrat, Florida) announced today. He is chairman of the Senate Special Subcommittee on Wartime Health and Education. Other topics to be taken up are the significance of the Selective Service physical examination data, methods of improving the distribution and quality of medical care, hospital planning and construction. "At the first series of hearings," said Senator Pepper, "the committee heard testimony of medical and dental experts of the Army, Navy, Selective Service System and U. S. Public Health Service. Startling data were disclosed relating to the tragic fact that nearly 5,000,000 of the nation's young men have been found physically and mentally unfit for service in the armed forces of their country. Constructive proposals have been offered to improve the people's health so that in the future, whether in war or in peace, the nation will not be similarly handicapped."

Senator Pepper indicated that at the September 18-20 hearings representatives of the organized medical profession, industry and labor will testify. Witnesses will include Dr. Roger I. Lee, President-Elect, Dr. Harvey Stone and Dr. R. L. Sensenich of the American Medical Association; Dr. John P. Peters, secretary, Committee of Physicians for Improvement of Medical Care; Dr. E. I. Robinson, president, National Medical Association; Dr. Ernst P. Boas, chairman, Physicians Forum; Dr. John R. Boling, president, Florida State Medical Society; Dr. Victor Heiser, chief medical consultant, National Association of Manufacturers; Dr. Leverett D. Bristol, chairman, Health Advisory Council, U. S. Chamber of Commerce, and representatives of the American Federation of Labor and the Congress of Industrial Organizations. Mayor Fiorello H. LaGuardia will testify concerning the projected health insurance plan for New York City.

Venereal Disease Problem

A national conference on venereal disease control will be held in St. Louis, November 9 to 11, Dr. J. R. Heller Jr., chief of the Venereal Disease Division of the U. S. Public Health Service, has announced. "The war has brought large increases in venereal disease infections in many parts of the world," he said. "Simultaneously, however, science has produced new drugs, and medical research has produced new methods to combat syphilis and gonorrhea. A major purpose of the conference will be to consider how these new methods can be applied promptly on the large scale necessary to halt what might become a worldwide postwar venereal disease epidemic.

"The seriousness of the venereal disease problem throughout the world," he said," is exemplified by reports indicating that infections are spreading even in the Scandinavian countries, which for many years have been almost free of venereal disease." Dr. Heller said that with millions of Americans returning from foreign lands, and an enormous expected increase in travel to and from the United States, effective venereal disease control will require international cooperation. The eighth postgraduate course in venereal disease control will be conducted at the Public Health Service Medical Center, Hot Springs, Ark., October 19 to November 8. The postgraduate training course will be given to health officers and to private physicians cooperating with state and local health department venereal disease control programs.

Dr. Heller, in a letter to venereal disease control workers, said that an enormous new venereal disease control responsibility will face state and local health departments throughout the country on demobilization. He said that a plan had been agreed on by the Surgeon General of the Army and the Surgeon General of the Public Health Service which would assure return of soldiers to civilian life practically free of infectious syphilis "and thus preclude the introduction of new chains of infections in home communities." The plan is already in operation at army separation centers and will be used when large scale demobilization begins.

Social Hygiene Instruction in Schools

A program of social hygiene instruction in public schools "to begin with the preschool child, continue throughout public school training and carry over into the education of adults, particularly parents," is recommended in a resolution of the board of managers of the National Congress of Parents and Teachers. Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, was advised that the congress supports the efforts of federal, state and local educational authorities to institute such a program. The congress believes that the program will help

in "providing adequate juvenile protection, preventing the spread of venereal infection and providing more adequate personal, family and community living."

Music as an Aid to Treatment

Music as an adjunct to medicine is being tried out at Walter Reed General Hospital here. The Surgeon General of the United States Army has authorized the Institute of Applied Music to conduct an experiment in developing the potentialities of music in relation to medicine. The institute, a group of professional musicians, was organized to work out the problem on patients to determine the effect of music on certain types of mental and nervous disorders. The group is engaged in the experiment under the guidance of Miss Frances Paperte, former member of the Chicago Opera Company and soloist with the New York Philharmonic and Cincinnati symphony orchestras. Participating musicians are working in close collaboration with army psychiatrists treating the patients. The institute plans to learn how the slightest gain, if any, is accomplished, to determine if it will work again and if it can be accepted as a rule. All music presented will be checked against a table of variables and applied in a predetermined manner, subject to the requirements of the doctor in charge. Probability curves have been charted, and these will be checked against actual results obtained. From this, greater refinements can be plotted, until cause and effect principles have been established.

"As in any scientifically controlled experiment," says Miss Paperte, "it is obvious that it must be proved beyond any doubt that the system followed is dependable. The work, of course, is too new to permit of conclusions. Various methods have been explored and at present it may be safe to say that indications are encouraging." She said that music as an aid to treatment has been tried before, but it has never been properly or adequately controlled, nor has its application been evaluated scientifically. The music itself, presented by the highest type of professional musicians, is regarded solely as an aid to treatment and not, as popularly regarded, as merely an entertainment or recreational performance. Miss Paperte states that most people are unaware of the deep understanding required in considering the psychologic significance of music as utilized in the work. Dealing with the instinctive tendencies of human beings is a serious matter, with physical, psychologic and social values at stake, and these factors are too significant to allow of any but technically sound and objective handling.

FWA Grants Washington Hospitals $4,100,000

The Federal Works Administration grant of $4,100,000 to George Washington and Georgetown universities for two new 400 bed hospitals in the capital may obviate necessity for the proposed 1,500 bed medical center, according to Representative Thomas D'Alesandro Jr. (Democrat, Maryland). He expressed the hope that grants would also be made to Gallinger, Providence and Emergency hospitals. The FWA grants came as a result of congressional activity to increase Washington's badly needed hospital facilities. Construction is to start soon, and the two hospitals should be ready for occupancy in a year. Order for allocation of funds has been signed by President Roosevelt, and priorities have been approved. Georgetown University was granted $1,400,000 for a building to be erected on a university owned site on Reservoir Road. The university will furnish $600,000 in funds to replace its old buildings of 265 bed capacity, some 50 years old. George Washington University was granted $2,700,000 for construction of a nine story building and purchase of a site near Washington Circle. The university will post $350,000 for the project and pay the government money derived from sale of its present 92 bed building. Abandonment of the universities' present hospital buildings will mean a net gain of 443 new hospital beds for the District of Columbia.

MEDICAL ECONOMIC ABSTRACTS

THE MILWAUKEE MEDICAL SOCIETY EXPANDS PREPAYMENT PLAN

According to reports in the Milwaukee *Journal and Sentinel* the Milwaukee Medical Society has decided to expand a plan which it has had in operation for the last seven months for the 300 employees of one company into a general plan to be offered to all industrial organizations. Only surgical and obstetric care in a hospital will be covered.

The monthly rates charged are for the individual $0.90, for husband and wife, including maternity, $1.75, and for the complete family $2.50. While it is expected that most enrolments will be through pay roll deductions, arrangements will be made for other groups where possible. The income limit for an individual is $1,800 a year and for a family $2,400, plus $200 for each child under 18. For subscribers above this income the indemnity plan will be used with the physician entitled to make an additional charge if desirable.

CHANGES IN NEW JERSEY PLAN CONTRACT

The Medical-Surgical Plan of New Jersey has revised its contract, making it possible for physicians to make additional charges under the following conditions: [1]

If the patient shall have been admitted to a hospital for a private accommodation not exceeding one bed per room.

If the patient shall have been admitted for semiprivate or ward accommodations and shall have agreed to pay the participating physician an additional amount; except that additional amounts shall not be payable if under the "single contract" the annual income of the subscriber is less than $2,000 or under the "family contract" the annual income of the subscriber is less than $2,000 plus $500 for the first enrolled dependent plus $250 for each additional enrolled dependent.

If the income of the subscriber is more than that stated in the preceding paragraph but he has failed to divulge the existence of the contract to the physician.

The amounts payable for obstetric care shall not be considered as including payment for antepartum and postpartum care rendered outside the hospital.

Amounts payable by the plan will be paid for obstetric deliveries occurring in the home or elsewhere outside the hospital under conditions beyond the control of the patient.

Services rendered at the time of full term obstetric deliveries or for tonsillectomies will not be eligible for payment unless rendered at least nine months after the effective date of the subscriber's contract.

Amounts up to $25 will be payable for emergency services rendered in caring for accidental injuries which would ordinarily be hospitalized, if services are rendered in outpatient departments or elsewhere outside the hospital, provided the services are rendered within twenty-four hours of the accident.

Medical services (not surgical) eligible for payment will be limited to such services rendered during twenty-one days of hospitalization during any one contract year.

1. J. M. Soc. New Jersey **41**: 316 (Aug.) 1944.

PREPAYMENT PLAN IN GEORGIA

According to the bulletin of the Fulton County (Ga.) Medical Society for June 1 the Fulton County society presented a skeleton plan for medical and surgical care to the house of delegates of the Medical Association of Georgia at its recent meeting. The plan provided that the control be vested in the Medical Association of Georgia and was favored by the reference committee and adopted by the association.

According to the bulletin, "Voluntary health plans of other states will be studied and the cooperation of state, county and municipal authorities solicited in the formation of a workable pattern to assure the people of our state better distribution and accessibility of medical and surgical care and adequate hospitalization."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Psychiatric Rehabilitation Clinic. — The department of psychiatry of the Mount Zion Hospital of San Francisco has opened a psychiatric rehabilitation clinic for the treatment of ex-servicemen and women discharged from the armed forces because of neuropsychiatric disabilities.

Surcharge Over Existing Industrial Accident Fees.— The state industrial accident commission has approved a surcharge of 15 per cent over existing industrial accident fees, effective August 1. The surcharge will be effective for the duration of the war. According to the *Bulletin* of the Los Angeles County Medical Association, the commission proposes to establish a study committee to consider "a permanent medical fee schedule to become effective after the 'duration'." The commission has had under consideration for some time a proposed schedule of medical and surgical fees for some 547 procedures which might be undertaken in compensation work. While the proposed schedule has not been approved, the surcharge of 15 per cent for existing fees was approved. The provision covering the surcharge states that "cases under treatment before and after Aug. 1, 1944 shall have their medical and surgical charges segregated, so that services rendered before Aug. 1, 1944 shall be charged at the existing rates and services rendered after August 1 shall be billed at existing rates plus the 15 per cent surcharge."

DISTRICT OF COLUMBIA

Personal.—Sir Howard Walter Florey, professor of pathology at the University of Oxford, England, who is largely concerned with the development of penicillin and its use, visited Washington during the first week in August.——Dr. J. Winthrop Peabody, Washington, has been elected an honorary member of the Sociedad Chilena de Tisiologia.

ILLINOIS

Society News.—Dr. Alexander J. Kotkis, St. Louis, discussed "Some Problems of Physical Medicine in the Field of Therapeutics" before the Madison County Medical Society in Granite City, September 1.

Chicago

Food in International Relations.—The twentieth annual institute of the Norman Wait Harris Memorial Foundation was held at the University of Chicago, September 4-8. The theme of the meeting was "Food in International Relations" and speakers included Conrad A. Elvehjem, Ph.D., Madison, Wis.; Karl Brandt, Dr.Agr., Stanford University, Calif., and Paul H. Appleby, LL.D., assistant director of the Bureau of the Budget, Washington, D. C. Among other speakers at the meeting were Dr. Frank G. Boudreau, chairman of the food and nutrition board, National Research Council; John D. Black, Ph.D., Harvard University, Cambridge, Mass.; Dr. Andrew C. Ivy, head of the department of physiology and pharmacology, Northwestern University Medical School; Dr. Paul R. Cannon, chairman of the department of pathology, University of Chicago School of Medicine; Leonard A. Maynard, Ph.D., School of Nutrition, Cornell University, Ithaca, N. Y., and Ancel B. Keys, Ph.D., University of Minnesota, Minneapolis.

KANSAS

New Secretary of Sedgwick County.—Mr. Martin Baker, Wichita, formerly instructor in music at the Wichita North High School, has been chosen executive secretary of the Sedgwick County Medical Society. He fills the vacancy that occurred when Mr. Oliver Ebel resigned to become executive secretary of the Kansas Medical Society.

New Building for Research in Psychiatry.—On July 24 the Menninger Foundation opened a new building for research and education in psychiatry at 3614 West Sixth Avenue, Topeka. The new building has twenty-five rooms, including soundproof laboratories, class rooms and offices and a large conference room, and houses the work of the research, teaching and administrative departments of the foundation. The educational work of the foundation consists at present in the teaching of resident physicians in psychiatry, the postgraduate training of nurses and the teaching of psychologists, therapists and psychiatric social workers. Plans are being completed for postwar instruction of physicians in psychosomatic medicine. The Menninger Foundation was established in 1942 as a nonprofit organization to advance research and education in neuropsychiatry. It announces the publication soon of the results of a three year research project on the "Validation and Evaluation of Psychological Testing Technics." This will be the second report of the foundation's research project to appear in book form, the first being a monograph entitled "Emotions and Memory." Among projects under way at the present time are "An Investigation of the Applications of Hypnosis in Modern Psychiatry" and "An Investigation of the Clinical Syndrome of Firesetting." A preliminary report of the former was presented at the 1944 session of the American Psychiatric Association.

KENTUCKY

Personal.—Dr. William J. Walter, Pikeville, has been appointed director of the Pike County Health Department.

State Medical Meeting in Lexington.—The Kentucky State Medical Association has designated its 1944 meeting at the Phoenix Hotel, Lexington, September 18-20, the Benjamin Rush Palmer Memorial Meeting in honor of the ninth president of the association, who served from 1860 to his death in 1865. The meeting will be under the presidency of Dr. James H. Pritchett, Louisville. Speakers will include:

Dr. John A. Toomey, Cleveland, Chemotherapeutics in Pediatrics.
Dr. Maurice Levine, Cincinnati, Psychosomatic Medicine.
Col. Anthony J. Lanza, M. C., Present Status of Industrial Medicine.
Major Gen. David N. W. Grant, M. C., Current Problems in Aviation Medicine.
Dr. Frederick H. Falls, Chicago, The Present Status of Pain Relief in Labor.
Dr. William D. Stroud, Philadelphia, Cardiovascular Diseases.
Dr. Ralph Pemberton, Philadelphia, Arthritis.
Brig. Gen. Fred W. Rankin, M. C., Medical Service in a Theater of War.
Dr. Irvin Abell, Louisville, Surgical Aspects of the Chronic Dyspepsias.
Col. John B. Youmans, M. C., Nutrition—Its Relation to Deficiency Diseases.

The oration in medicine will be delivered Tuesday by Dr. Frederick G. Speidel, Louisville, on "Conservatism and Liberalism in Medicine" and the oration in surgery Wednesday by Dr. James Farra Van Meter, Lexington, on "Penicillin—An Early Evaluation in Surgical Complications." A public meeting will be held Tuesday evening in the auditorium of the U. S. Public Health Service Hospital, at which the speakers will include Drs. Oscar O. Miller, Louisville, president-elect of the state society, on "Some Aspects of the Tuberculosis Problem"; Roger I. Lee, Boston, President-Elect of the American Medical Association, "Accelerated Medicine Today and Tomorrow," and Edward H. Cary, Dallas, "The Medical Profession and Federal Legislation." One session will be devoted to chemotherapy (penicillin), the civilian aspect to be presented by Dr. Donald G. Anderson, Boston; medical aspects, Brig. Gen. Hugh J. Morgan, M. C.; surgical aspects, Col. Burr N. Carter, M. C., and venereal disease treatment by Lieut. Col. Thomas H. Sternberg, M. C. There will be a symposium on tropical diseases Wednesday at which the speakers will be Rolla E. Dyer, assistant surgeon general, U. S. Public Health Service, Capt. Alphonse McMahon (MC), and Brig. Gen. James S. Simmons, M. C. The twenty-second annual meeting of the Woman's Auxiliary to the state medical association will be held at the Lafayette Hotel, Lexington, September 18-20.

MICHIGAN

State Medical Meeting in Grand Rapids.—The seventy-ninth annual session of the Michigan State Medical Society will be a postgraduate conference on war medicine at the Civic Auditorium and the Pantlind Hotel, Grand Rapids, September 27-29, under the presidency of Dr. Claude R. Keyport, Grayling. Included among the speakers will be:

Dr. Geza de Takats, Chicago, Vascular Disease.
Dr. Earl D. Osborne, Buffalo, The Treatment of Eczema (Dermatitis) Based on Etiology.
Dr. Robert A. Moore and Edward Mallinckrodt Jr., St. Louis, The Pathology of Rickettsial Diseases.
Dr. John W. Harris, Madison, Wis., The Place of the General Practitioner in the Practice of Obstetrics.
Dr. Arthur W. Proetz, St. Louis, Allergy in the Ear, Nose and Throat.
Dr. Tom D. Spies, Birmingham, Ala., and Cincinnati, Vitamins and the Practice of Medicine.
Dr. Max M. Zinninger, Cincinnati, Gallbladder.
Dr. Albert D. Ruedemann, Cleveland, The Protruding Eye.
Dr. Joseph L. Baer, Chicago, Prolonged Labor.

Dr. Emery A. Rovenstine, New York, The Preanesthetic Preparation of the Surgical Patient.
Dr. Frank H. Krusen, Rochester, Minn., A Rehabilitation Program for Military Veterans.
Dr. Abel A. Applebaum, Toledo, Ohio, Primary Atypical Pneumonia.
Dr. Sidney Farber, Boston, Some Organic Digestive Disturbances in Early Life (Nature, Diagnosis and Treatment).
Dr. S. William Becker, Chicago, Penicillin in the Treatment of Syphilis.
Dr. Arthur C. Curtis, Ann Arbor, Mich., Recent Advances in the Treatment of Syphilis.
Dr. Charles A. Aldrich, Rochester, A Preventive Medical Program as Applied to Pediatrics.
Dr. Frederick H. Falls, Chicago, Obstetrical Hemorrhages.
Dr. James L. Wilson, New York, Advance in the Prevention and Treatment of Poliomyelitis.

Military speakers will include:

Brig. Gen. Charles C. Hillman, M. C., Tropical Medicine.
Capt. Arthur W. Frisch, M. C., Sulfonamide Resistant Gonorrhea.
Major Frank H. Mayfield, M. C., Herniated Nucleus Pulposus.
Herman E. Hilleboe, medical director, and Eugene J. Gillespie, senior assistant surgeon, U. S. Public Health Service, The Role of the General Practitioner in Tuberculosis Control.
Col. William C. Menninger, M. C., Neuropsychiatry and the General Practitioner: Lessons Learned from the Army.
Charles J. Clark, flight surgeon, and Harry Britton, assistant flight surgeon, What We have Learned About Aviation Medicine.
Brig. Jonathan C. Meakins, R. C. M. C., What a Modern Army Health Service Should Be.

On Wednesday evening Preston Bradley, LL.D., Chicago, will deliver the Andrew P. Biddle Oration on "When Doctors Disagree." Thursday evening has been designated "State Society Night" and speakers will include Dr. Robert L. Novy, professor of clinical medicine, Wayne University College of Medicine, Detroit, and John F. Hunt, executive and director of research, Foote, Cone and Belding, advertising agency, Chicago, on "What the People of Michigan Think of Medicine." Features of the annual session will include a series of seventeen discussion conferences (quiz periods) covering general practice and the various specialties. The county secretaries' conference will be held Wednesday evening, September 27; the speakers will be Dr. L. Fernald Foster, Bay City, on "The Michigan Picture in Medicine"; Mr. M. C. Smith, Lincoln, Neb., "Nebraska's New Medical Practice Act," and Dr. Freeman A. Brockenshire, Windsor, Ont., Canada, "Health Insurance Proposals in Canada." The Woman's Auxiliary will meet at the Pantlind Hotel, September 26-28. The lecture by Dr. Hilleboe is sponsored by the Michigan Tuberculosis Association. The American College of Chest Physicians, Michigan chapter, and the Michigan Pathological Society will meet during the session.

NEW YORK

Rheumatic Heart Disease Program.—The Yonkers Tuberculosis and Health Association recently launched a program for the control and treatment of rheumatic heart disease in Yonkers, involving the establishment of a special clinic for prevention, control and study of the disease and a coordinated citywide educational project, according to the *Westchester Medical Bulletin*. The clinic is to be located at St. John's Riverside Hospital, Yonkers, equipped and financed by the hospital, and will include a fluoroscope, laboratory and electrocardiographic facilities. The tuberculosis and health association will provide a salary for a specially trained worker who will study the work with the patients at the clinic, the home background of rheumatic children, and will assist in an advisory and teaching capacity with the nurses of the city health department, the Visiting Nurse Association and the hospital and school nurses.

Report on Mental Patients.—The temporary commission on state hospital problems in a recent report recommended that steps be taken to make insulin shock therapy available in the future to dementia precox patients in all state hospitals for the insane. In order to obtain a consistent use of the new treatment, the commission urged that a consulting service be established in the state department of mental hygiene to assure adequate records, to hold consultations with hospital staffs and to make follow-up studies. The offering of special courses to train personnel at the New York State Psychiatric Institute and Hospital also was urged. The report stated that 1,128 dementia precox patients treated at the Brooklyn State Hospital "did substantially better in all respects" than 876 patients in other state hospitals in the metropolitan area who were not so treated. Fifty-five per cent of the patients who were given insulin shock therapy were enabled to become useful members of the community; 79.5 per cent of the insulin treated patients were able to leave the hospital compared with 58.8 per cent of the nontreated group and after a shorter stay.

New York City

Otto Loewi Receives Cameron Prize.—Dr. Otto Loewi, research professor in pharmacology at New York University College of Medicine, has been awarded the Cameron Prize in Practical Therapeutics of the University of Edinburgh in recognition of "his fundamental work on the chemical transmission of the nervous impulse," *Science* reports.

Course in Industrial Medicine.—On October 31 the Medical Society of the County of Queens will initiate a series of lectures in industrial medicine. The opportunities in industrial health will be discussed by Dr. James G. Townsend, U. S. Public Health Service, and Dr. William A. Sawyer, Rochester, N. Y. Ten lectures will be offered and a certificate will be issued to those who attend the sessions showing their completion of the course.

Diabetes Association to Develop New Camp.—The New York Diabetes Association on August 23 announced that it had taken title to the former Golden Rule Inn property on Mirror Lake 4 miles below Kingston, N. Y., and will convert the buildings into a camp for poor diabetic children of greater New York. Dr. George E. Anderson, Brooklyn, president of the association, estimated that $10,000 would be needed to convert the buildings to meet the requirements of a diabetic children's camp, according to the New York *Times*.

Institute of Clinical Oral Pathology.—The New York Institute of Clinical Oral Pathology will hold a symposium on "Fluorine in Dental Public Health" at the New York Academy of Medicine, October 30. Included among the speakers will be:

Frederick S. McKay, D.D.S., Colorado Springs, Colo., Fluorine and Mottled Enamel: A Historical Survey.
Henry Trendley Dean, senior dental surgeon, U. S. Public Health Service, The Epidemiology of Fluorosis and Dental Caries.
Dr. Wallace D. Armstrong, Minneapolis, The Fluorine Content of Enamel in Relation to Resistance of Teeth to Caries.
Basil G. Bibby, D.M.D., Boston, Effects of Topical Application of Fluorides in Dental Caries.
David B. Ast, D.D.S., Albany, N. Y., The Practicability, Efficacy and Safety of Fluorinating a Communal Water Supply Deficient in Fluorine to Control Dental Caries.

NORTH CAROLINA

Physician Wills Library to County Medical Society.—The will of the late Dr. Charles H. Cocke, Asheville, provided that his medical library, magazines and other publications be given to the Buncombe County Medical Society Library in Asheville. Dr. Cocke died August 3.

Bennett College Extends Health Service.—A grant of $21,310 has been given by the General Education Board to cover a three year period to the Bennett College for Women, Greensboro, to enlarge its health program. According to the New York *Times* the annual home making institute held at the college has made available to a larger community results of studies in health, home and family life. When the new project is set in operation in September a full time community worker will direct it, using all the resources of the college to make available the maximum facilities in personnel. The program aims to give Bennett students an understanding of how a knowledge of health can function in the community and to make the community more aware of health problems.

OHIO

Bureau of Industrial Hygiene Created.—The Cleveland City Health Department has created a bureau of industrial hygiene. Mr. Herbert G. Dyktor, for more than four years chief engineer of the bureau of industrial hygiene of the Michigan Department of Health, Lansing, has been named chief of the new Cleveland bureau.

Personal.—Dr. Ewing H. Crawfis, assistant superintendent and psychiatrist at the Lima State Hospital, Lima, has been appointed superintendent of the Cleveland State Hospital succeeding Dr. Hans P. Lee, who resigned to return to the Toledo State Hospital, Toledo.—Dr. John G. Schwarz has been named superintendent at the Ohio Hospital for Epileptics, Gallipolis.

Academy of Medicine Program.—On September 19 the annual meeting of the Academy of Medicine of Cincinnati will open its regular season. Dr. Chester S. Keefer, Boston, will speak October 3 on "Penicillin." Subsequent programs in the society's schedule include the following:

Dr. Lawrence S. Kubie, New York, Psychotherapy in Medical Practice, October 17.
Dr. Herbert C. Maier, New York, Surgical Treatment of Pulmonary Suppuration, November 7.
Dr. Shields Warren, Boston, The Early Diagnosis of Cancer, November 21 (joint meeting with the cancer council).

Dr. Eugene A. Stead Jr., Atlanta, Ga., Mechanism and Treatment of Shock and Circulatory Collapse, December 5 (joint meeting with the heart council).
Dr. Frederick C. Irving, Boston, Cesarean Section, December 19.
Dr. Otto K. Engelke, Ann Arbor, Mich., The Relations Between the Health Department and the Doctor, Jan. 2, 1945.
Lieut. Comdr. Alvin F. Coburn (MC), The B. K. Rachford lectures on "Therapy and Prevention of Rheumatic Fever," January 16 and 17.
Dr. Merrill C. Sosman, Boston, X-Ray Diagnosis, February 6.

The Roger Morris Lecture of the society will be delivered February 20 by Dr. George J. Heuer, New York.

OREGON

Personal.—Carlisle P. Knight, Portland, medical director of the U. S. Quarantine and Hospital Service in Oregon, was recently given a banquet in Portland on the occasion of his retirement after thirty-six years with the U. S. Public Health Service.——Dr. Lamar A. Byers, Jackson, Tenn., has been named health officer of Coos County with headquarters in Coquille.

Survey of Child Guidance Clinics.—Dr. Milton E. Kirkpatrick, director of the division on community clinics of the National Committee for Mental Hygiene, New York, will conduct a survey of community child guidance clinics in Oregon. The survey was instituted by a number of interested agencies in the state and will determine the status of the existing program in the state and particularly in the Portland area.

TEXAS

Progress of Medical Library Plans.—Tentative plans for the construction of a new medical library building in Houston include the housing under one roof of the activities of the Houston Academy of Medicine, the Harris County Medical Society, the Postgraduate Medical Assembly, the Medical and Dental Service Bureau, the *Medical Record and Annals* and the woman's auxiliary. The proposed building would be a three story construction and contain the combined libraries of the Houston Academy of Medicine, the Baylor University College of Medicine, the M. D. Anderson Foundation for Cancer Research and the Texas University College of Dentistry. In addition, there will be an auditorium accommodating about 400 persons. It is anticipated that the construction would cost around $450,000. At a meeting, July 19, fellows of the Houston Academy of Medicine pledged their incomes for from twelve to fifteen days to assist in obtaining needed funds.

Changes in the Faculty at Texas Medical Branch.—D. Bailey Calvin, Ph.D., has been promoted to professor of biologic chemistry and associate dean at the University of Texas Medical Branch, Galveston. New appointments include:

Thurlo B. Thomas, Ph.D., appointed assistant professor of anatomy.
Dr. Wesley F. McKinley Jr. appointed assistant professor of internal medicine.
Henry J. Ralston, Ph.D., San Francisco, appointed assistant professor of physiology.
Dr. Carl U. Dernehl appointed to assistant professor of industrial hygiene in the department of preventive medicine and public health.

Promotions at the school include:

Dr. Jack R. Ewalt promoted to professor of neuropsychiatry.
Col. Robert M. Moore, M. C. (on leave for military service) promoted to professor of surgery.
Dr. Stephen Weisz promoted to associate professor of neuropsychiatry.
Dr. Julius L. Jinkins promoted to associate professor of obstetrics and gynecology.
Dr. Henry H. Sweets Jr. promoted to associate professor of pathology and director of the John Sealy Clinical Laboratory.
Major Truman G. Blocker Jr., M. C. (on leave for military service) promoted to associate professor of surgery.
Dr. A. J. Jinkins promoted to assistant professor of obstetrics and gynecology.
Dr. Norman D. Schofield promoted to assistant professor of pathology.

WASHINGTON

Personal.—Dr. Thomas H. Biggs has been appointed health officer of Kelso in addition to his work as health officer of Cowlitz County.——Dr. Joseph H. Fitz, Montesano, has resigned as county coroner of Grays Harbor.——Dr. William Ernest Rownd Jr. was recently appointed police surgeon of Bremerton.——Dr. Emil E. Palmquist, Seattle, health officer of King County, was recently elected president of the Washington State Social Hygiene Association.

WEST VIRGINIA

District Health Conference.—"Control of Tuberculosis in West Virginia" will be the theme of the annual Southern District Health Conference, covering twenty-four counties in the state, which will be held September 29 at the Daniel Boone Hotel, Charleston.

WISCONSIN

Personal.—Dr. Arthur V. de Neveu recently resigned as medical director of the Johnston Emergency Hospital, Milwaukee, to enter private practice; he held the position for eighteen years.

Kellogg Gift for Health Education.—A grant has been given by the W. K. Kellogg Foundation of Battle Creek, Mich., to be available for five years for a program of health education in Wisconsin. The fund will be administered by the Wisconsin department of public instruction, newspapers reported.

First County Mental Hygiene Program.—Brown County has made plans to employ a psychiatrist to hold a child guidance center to further mental hygiene. This action is an extension of the program that has been carried on by the Wisconsin State Board of Health for the past two years. The county is said to be the first in the state that has inaugurated a mental hygiene program. Two members of the seven member psychiatric committee of the Brown County Board of Supervisors which has set up the program are Drs. George M. Shinners, health commissioner of Green Bay, and Marshall W. Meyer, district health officer of the state board of health.

HAWAII

Penicillin Center.—Queen's Hospital, Honolulu, has been designated as the central distributing center for penicillin for civilian use in the Territory of Hawaii. A total of 50 million units has been allotted for distribution for the first month, the order having been placed through the War Production Board as of June 15.

Health in Hawaii.—In 1942 there were 10,422 live births reported for the Territory of Hawaii. The crude birth rate was 23.6 per thousand of estimated population, as compared with the rate of 23.0 per thousand of estimated population in 1941. Of the 10,422 live births 3,754, or 36 per cent, were Japanese; 2,764, or 27 per cent, were part Hawaiian; 1,845, or 18 per cent, were Caucasian; 1,044, or 10 per cent, were Filipino; 548, or 5 per cent, were Chinese, and 246, or 2 per cent, were Hawaiian. There were 3,397 deaths from all causes in 1942, a death rate of 7.7 per thousand of estimated population. This rate is considerably lower than the rate of 12.2 per thousand of population for 1941, when war casualties from the air raid on Pearl Harbor greatly increased the crude death rate. A comparison which excludes deaths among military personnel and civilians due to operations of war in 1941 shows that the crude death rate in 1942 was slightly higher than that recorded in 1941. The ratio of births to deaths reported for the Territory of Hawaii in 1942 was 307 births to 100 deaths. This ratio has been increasing steadily in the Territory of Hawaii in recent years up to 1941, when war casualties caused a large decrease. The ratio was 253 in 1937, 281 in 1938, 299 in 1939, 305 in 1940 and 189 in 1941. There were 405 deaths of infants under 1 year of age in 1942, an infant mortality rate of 38.9 per thousand live births. This rate was 3.5 per cent lower than that for 1941 and is the lowest infant mortality rate ever recorded for the Territory of Hawaii. The rapid decline in the infant mortality rate for the Territory of Hawaii is most impressive; during the past ten years it has been practically cut in half. The six principal causes of death and their death rates in the Territory of Hawaii in 1942 were diseases of the heart 132.7, accidents other than motor vehicle 90.9, cancer and other malignant tumors 64.9, tuberculosis 62.8, nephritis 58.5 and pneumonia (all forms) and influenza 47.5 per hundred thousand estimated population. These causes accounted for more than 59.6 per cent of all deaths. Relatively large decreases in the death rate were reported in 1942 for cancer and other malignant tumors and for intracranial lesions of vascular origin. Increases in the death rate were recorded for tuberculosis, cerebrospinal (meningococcic) meningitis, diseases of the heart, pneumonia (all forms) and influenza, nephritis, suicide, homicide, motor vehicle accidents and other accidents. The death rate for cerebrospinal (meningococcic) meningitis reached epidemic proportions in 1942 in the territory, as on the mainland of the United States. Because of the increased military activity in the Hawaiian theater of operations the increase in the accident death rate was not unexpected. A large increase in deaths from air transport accidents accounted for the greater part of the increase in the accident death rate. The suicide death rate in 1942 was one of the highest recorded for the territory since its admission to the registration area. The suicide death rate increased from 14.8 per hundred thousand of population in 1941 to 22.4 in 1942. This high rate is an unusual occurrence in a war year.

GENERAL

Tropical Medicine Society Admitted to National Research Council.—At a recent meeting of the executive committee of the division of medical sciences, National Research Council, it was voted unanimously to admit the American Society of Tropical Medicine to membership in the division.

Fellowships in Child Psychiatry—A limited number of fellowships are being offered for training in extramural child psychiatry. Selection for these fellowships is made by the National Committee for Mental Hygiene, by which eligible applicants are to be recommended for appointment, the term and plan of the fellowship to be determined by the peculiar needs of the applicant. Candidates should have at least a general internship and two years of psychiatry in an approved mental hospital in addition to other qualities fitting them for extramural service. The stipends vary slightly with location and status of the fellow but in general range between $2,000 and $2,400. Additional information may be obtained from Dr. Milton E. Kirkpatrick, National Committee for Mental Hygiene, 1790 Broadway, New York.

The G. I. Joe Literary Award.—E. P. Dutton and Company, Inc., New York, announces the G. I. Joe Literary Award of $5,000 for the best book manuscript submitted by a service man or woman of any rank, in any branch of the U. S. Service, wounded in action in the present world war. Half of the cash award will be paid on acceptance of the manuscript and the other half on its publication, all as an advance against royalties, under a publisher's regular contract. Professional correspondents are excluded. In making the announcement, E. P. Dutton and Company states:

> Whether these books tell the story of hope or disillusionment is not the publisher's concern. They are looking for the best selection possible of fiction or nonfiction, and poetry, which is definitely going to be written—is being written today—by the men and women who feel that they must get down in print what they think and feel about their shattered world. And it is to the wounded, first to return from the battle fronts, that the publishers offer this award.

Prize Contest for Physician Artists.—The American Physicians Art Association, through the cooperation of Mead Johnson and Company, announces a prize contest for medical officers in the armed forces and civilian physicians. "Courage and Devotion Beyond the Call of Duty" has been designated the theme of the contest, and physicians may use any one of the following mediums: painting in oil or tempera; water colors, transparent or opaque; sculpture in any medium; drawing, any medium; prints, etching, engraving, lithograph, wood block or linoleum block, and photography, including bromure, tinted and kodachrome. The purpose of the competition is to memorialize the heroism and devotion of the medical profession. The prize winning subjects will remain the property of the physician-artist, but the American Physicians Art Association shall have reproduction rights and also the privilege, for a period of three years after the close of the contest, of displaying prize winning objects at art museums, libraries, county medical societies, medical schools and similar institutions. That association shall also have the right to offer the prize winning works to any of these groups to use as murals, cornerstones, architectural designs and the like to memorialize the importance of the medical profession in war and in peace. The contest will expire May 20, 1946 in order that the prize winning objects may be ready for hanging at the annual session of the American Medical Association in June 1946. Any physician member of the American Physicians Art Association, including medical officers in the armed forces of the United States and Canada, are eligible to compete in the contest. A list of forty-two prizes will be divided equally, one set of prizes to be awarded to medical officers in the armed forces and the other to civilian physicians. Additional information may be obtained from Dr. Francis H. Redewill, secretary, American Physicians Art Association, Flood Building, San Francisco.

Suicide Rate Declines.—The suicide rate in the United States is now about one fifth lower than before the war, according to statisticians of the Metropolitan Life Insurance Company, who base their conclusions on the company's mortality records. In a release, July 27, it was stated that it is a familiar fact that suicides decline during wartime. From the two years following Pearl Harbor, 1942-1943, the suicide rate among the industrial policyholders was lower by about one fifth than the rate for the preceding three years. In 1943 the suicide death rate among these insured established a new low record. The death rate last year among this group at ages 1 to 74 was 6.8 per hundred thousand as compared with 7.7 in 1942 and 8.2 in 1941. The current records indicate that the death toll from suicide is still being further reduced. Among white male policyholders the greatest decline in suicides in 1942-1943, about one third as compared with prewar years, was at the later ages, where the toll is the heaviest. Among white women the greatest percentage decline, also about one third, occurred at the younger ages, 15 to 24, where the suicide rates are at their lowest. The Metropolitan statisticians attribute the general decline in the suicide rate in recent years principally to the "prevalence of favorable economic conditions and the psychological effect of the war." It is pointed out that the sharp decrease in the number of suicides committed by men at older ages "has probably been due, for the most part, to the opportunities for employment at relatively high wages. And the economic factor has also undoubtedly played a large role in reducing suicides among adolescent girls and young women. This is particularly gratifying, since it might have been expected that the wartime conditions which have increased delinquency among young girls might also have adversely affected their suicide rate." The statisticians also express the conviction that a psychologic factor has played a part in reducing the toll from suicides "by the subordination of petty personal considerations to the broader needs of the nation at war."

Report of Academy of Pediatrics.—A far reaching program to develop medical and health services for children is reflected in the report of various committees of the American Academy of Pediatrics published in the *Journal of Pediatrics* for August. In all its activities the academy emphasizes the cooperation of its members through its state fellowship. The committee for cooperation with nonmedical groups sees a new field for cooperation with the General Federation of Women's Clubs of America, in which two million young girls are enrolled and which devotes much of its teaching and training along health lines. The committee on governmental and medical agencies, which over a period of years developed a seven point program demonstrating how a state academy fellowship could be of constructive service to better child health through cooperation with state, governmental and medical agencies, plans to present to the academy of pediatrics at its November meeting a proposed study whereby the services to these many agencies could be improved. Some of the activities needing increased integration are hospital ward service, hospital clinic service, public health conferences, preschool and child health conferences, school health services, child guidance and mental hygiene program, adolescent hygiene programs, the pediatric part of tuberculosis case finding, immunization clinics, the pediatric part of crippled children's clinics, the pediatric services involved in voluntary health insurance programs and the medical supervision of children's camps. The report of the committee on Pan American scholarships indicates that the main difficulty of persons receiving these scholarships, which were made available by several sponsoring groups, was an insufficient knowledge of English, a problem which has been recognized and since controlled. At the second Congress on Pediatrics in Mexico City, March 26-April 1, fifteen fellowships in the academy were awarded to persons residing in Mexico. The activities of the committee on national defense continue to be centered on the medical supervision of refugee children in cooperation with the United States Committee for the Care of European Children. Groups of physicians have been organized to examine and to provide medical care for these children at various reception centers before placement. Examinations have included Schick and Mantoux tests and chest x-rays of positive reactors. At intervals from April 1, 1943 to the time of the report, seven groups comprising 80 children were received in three centers located in Pleasantville, N. Y., Bronx, N. Y., and Newark, N. J. To assure the best results, the coordination and perhaps consolidation of various committees and agencies concerned with the care of children is urged. The integration of effort is particularly important both for the present emergency and for the future development of the nursery and child care centers. In the formulation of plans for particular areas the consultation of members of the academy is urged. The special committee on rheumatic fever has pledged itself to cooperate in the rheumatic fever problem and to aid in the program to be carried out by the newly organized Council on Rheumatic Fever (THE JOURNAL, September 2, p. 42).

CORRECTION

Hospitalization of Dependents of Naval Personnel.—In the first item appearing on page 1047 of THE JOURNAL, August 12, is the statement "For each patient admitted and for each day in the hospital, the member of the Navy or Marine Corps concerned shall pay $7.75." The amount should have been $1.75 instead of $7.75.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 12, 1944.

Casualties in Normandy Flown Across the English Channel

Since D day 10,000 wounded have been brought from Normandy to England in Dakota planes flown by the British Transport Command. On the outward journey the planes carry ammunition and supplies. On the return journey each plane carries 18 stretcher cases and 6 walking wounded. Because they carry supplies on the outward flight, the ambulance machines do not bear the Red Cross insigne and claim no immunity from attack, even though they are not armed. The wounded are in charge of a woman nursing orderly. Priority cases find themselves in English hospitals at home within six or seven hours of being picked up on the battle field. The nursing orderly is qualified to administer oxygen or morphine during the flight. The United States Army has a similar aerial ambulance service to the battle front. Its flying nurses are given officer status and officer pay.

Improved Vital Statistics During the War

Dr. Percy Stocks, medical statistician of the General Register Office, has described the vital statistics of 1943 (*Lancet* **2**:65 [July 8] 1944). But for the influenza epidemic at the end of the year the vital statistics of England and Wales might have been as noteworthy as those of 1942. In the first three quarters of 1943 the death rate was 11.3 per thousand, compared with 11.8 and 11.7 in the corresponding periods of 1942 and the prewar year of 1938. The rates for the years 1938-1943 were 8.52, 8.49, 9.90, 9.32, 8.09 and 8.24. In 1943 new low records were established for infant mortality (49.0 per thousand live births, compared with 50.6 in 1942 and 52.8 in 1938) and for ages 1 to 5 (3.34 per thousand living compared with 3.42 in 1942 and 52.8 in 1938). The crude birth rate rose to 16.5 per thousand in 1943, giving an approximate reproduction rate of 0.903, compared with 0.810 in 1938 and 0.853 in 1942. The tuberculosis mortality, which is usually increased by war, was much the same as before the war. Comparison with 1938 shows that deaths from respiratory tuberculosis were 619 more than those in 1938 for males but 561 less for females. The cause of the improved vital statistics during the war seems to be the abolition of unemployment.

Information to Be Disclosed to Military Authorities as to the Source of Venereal Disease

A regulation of the Ministry of Health which has given rise to much criticism provides that any one reported to the health authorities by two persons for having transmitted venereal disease can be compelled to undergo examination and treatment. The ministry has now informed military authorities that information so obtained may be disclosed to medical authorities of the British, American or other allied forces so far as it is needed to secure examination and treatment of persons alleged to be sources of infection.

Forcible Vaccination of a Soldier

A labor member asked the secretary of state for war in the House of Commons whether or not the forcible vaccination of a soldier at the command of a medical officer with the aid of four men was contrary to the regulations. The secretary replied that the man in question was vaccinated in spite of his protests that he did not wish to be vaccinated. His left wrist was held by one man and his right elbow by another. The man had no conscientious objection to vaccination but refused because on a previous occasion he suffered from a sore arm, and in his view the vaccination and inoculations he had received had done him no good. The officer concerned had clearly no right to use force, and in normal circumstances disciplinary action would be taken against him, the secretary said. But this vaccination was carried out at the Anzio bridgehead, it was pointed out; reinforcements were arriving from Naples, where there was an outbreak of virulent smallpox, and the possibility of an outbreak on the bridgehead was causing great anxiety. In these exceptional circumstances the officer's action had been considered an error of judgment committed in good faith to safeguard the health of the troops in a dangerous medical situation. The secretary therefore would not take any disciplinary action.

Radium Precautions

The Radium Committee of King Edward's Hospital Fund for London has made some important recommendations. In the future, it is recommended that the clinical supervision of radium work in hospitals should be entrusted to the Radium Commission, which already exercises this function throughout the whole of Great Britain outside the metropolitan area. Radium and irradiation work generally have too often resulted in considerable suffering. To eliminate or at least to minimize that danger it is important that such work shall be carried out only in hospitals and institutions which can provide a full team of experts—specialists, physicians, surgeons, radiotherapists and physicists. That policy should be integrated over the whole country, the committee states.

AUSTRALIA

(From Our Regular Correspondent)

July 3, 1944.

Pharmaceutical Benefits—"Free Medicine" for Australia

As part of the social security plans of the commonwealth government, a bill to provide pharmaceutical benefits was passed by the Senate on March 2. Such benefits are defined as "(*a*) uncompounded medicines the names of which, and medicinal compounds the formulae of which, are contained in a prescribed formulary to be known as the Commonwealth Pharmaceutical Formulary; and (*b*) materials and appliances (not being uncompounded medicines or medicinal compounds) the names of which are contained in a prescribed addendum to the Commonwealth Pharmaceutical Formulary," these benefits, available to "every person ordinarily resident in the Commonwealth," from an approved pharmaceutical chemist or, in special circumstances, a medical practitioner "on presentation of a written and signed prescription or order (which shall be in accordance with the prescribed form and written on a form supplied by the commonwealth) of a medical practitioner."

The British Medical Association feels that its members will be hampered by being restricted to a formulary. If the prescription does not conform to the formulary the medicine will not be free. To meet this objection the government will establish a permanent committee of doctors and pharmaceutical chemists to investigate all new drugs so they may be included when necessary to keep the formulary up to date. The expense of a drug will not in itself debar the drug from being included in the formulary, provided its therapeutic efficiency is established.

The procedure will be for a patient to obtain from a doctor a prescription written on a special form, in which the doctor orders whatever medicine is necessary for treatment. This prescription will be presented to an approved chemist. The fears of the Friendly Societies that their dispensaries would be excluded from the operation of this act have been overcome by an invitation to all chemists and dispensaries to apply for approval to operate under the act.

Mr. G. G. Jewkes has been appointed director of pharmaceutical services in the Commonwealth Health Department. Mr. Jewkes was formerly chief chemist under the lapsed national health insurance scheme, and he has been attached to the Social Services Department. Mr. Jewkes's appointment will be followed soon by the formation of a pharmaceutical administrative staff in each state. These staffs will comprise a chief chemist assisted by technical officers and an organization to fix prices for prescriptions. The "free medicine" plan is expected to start early next year, as soon as preliminary administrative details have been completed. The estimated annual cost is £2,100,000.

At a Friendly Societies' conference held in Canberra it was decided that the pharmaceutical benefits taken from Friendly Societies by the commonwealth government under the free medicine plan would be replaced by other benefits. Among these would be ambulance services, home and clinical nursing and care for the aged and convalescent. State associations of Friendly Societies will press for any state legislation necessary. It was also decided to consider the possibility of a change in the present system of contract medical service to eliminate income limits. This is contrary to a long established policy of the British Medical Association, which feels, with justification, that contract medical practice should be limited to those whose income does not permit them to receive medical attention by private arrangement with their doctor.

The first reaction of the medical profession to this new pharmaceutical bill was a varying degree of opposition. The Victorian branch threatened to refuse to cooperate. Previous to the passing of the bill the Australian president of the British Medical Association (Sir Henry Newland) had met government representatives and later had issued a statement that the medical profession must be untrammeled. In January the Federal Council of the British Medical Association endorsed this view and added that all prescribed medicine should be given free. The general secretary of the Federal Council of the British Medical Association (Dr. John Hunter) spent some months in Canberra before the bill was considered, in an effort to have the act improved.

The British Medical Association is concerned about clause 15 (a) of the act. By this clause the director general of health may appoint a medical man in any area on a salary basis for the purpose of writing prescriptions so that the public may obtain free medicine. It is felt that this clause will enable the director general of health to appoint a doctor in any area where the medical men are not prepared to cooperate. Should this happen, not only would the people be able to have free medicine but they would also be able to have free prescriptions and possibly free medical attention as well. The medical profession regards this clause as a sinister step toward the introduction of a cheap form of national medical service.

Typhoid Epidemic in Victoria

In March 1943 a classic milk borne epidemic of typhoid broke out in an outer suburb of Melbourne. The report of this epidemic has now been published by the Victorian Department of Public Health. There were 440 cases, with a death rate of 5 per cent. Nearly all were primary cases. Milk was established as a vehicle of infection in a few days after the epidemic commenced. As a result of the zoning system of milk distribution the milk was distributed throughout the affected area by one dairy, the milk being sold either to the public directly or by shops or depots. Milk had been received from the dairy farms in cans, mixed and cooled in bulk and then returned to the rinsed can. The pooling of milk delayed detection of the source of infection, but the investigation ultimately resulted in the discovery of a woman carrier of typhoid. This carrier was unclean in her personal and domestic habits, and the dairy was insanitary.

The incidence of those infected was highest in the 5-14 age group, followed by the 15-24 age group. Infants under 12 months were either immune to or protected against infection. Mass inoculation against typhoid was not practiced because of want of information about its efficacy in patients already infected. Inoculation was advised in individual cases for newcomers to the district, in families with a member already a patient and for persons at continued risk, such as those attending the sick or handling infected material. One interesting point was that no soldier returned from the war of 1914-1918 developed the disease, even though there were over 200 exposed to the risk. These men have had inoculations against typhoid.

The milk which was the cause of the epidemic had not been pasteurized, and this epidemic has provided a valuable object lesson in the necessity for pasteurization. Unfortunately, even this dramatic lesson seems to have failed to impress the public and the politicians with the need for this modern essential of milk distribution. Medical men and scientists have been most outspoken in their views, but the "practical" dairyman and an apathetic public have so far won the day. However, insistence by the services for pasteurized milk is having its effect.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, July 31, 1944.

Teaching of Hygiene in Brazil

The Institute of Hygiene at São Paulo University has served as the state school of hygiene in connection with the São Paulo Medical School since 1931. It has granted several kinds of certificates recognized throughout Brazil. According to the reorganization plans for the university schools in Brazil still under consideration by the Ministry of Education, the teaching of Hygiene will be made through the School of Hygiene and Public Health organized at the universities and in the medical schools in which departments of hygiene and public health have already been developed. The reorganization of the Institute of Hygiene at São Paulo University has been approved by the University Council as well as by the National Council on Education. The teaching and future development program has been approved also by Dr. Gustavo Capanema, minister of Brazilian education, as a new and valuable element in the preparation of professional personnel and for the promotion of scientific progress.

The Rio de Janeiro Institute of Psychiatry

The Institute of Psychiatry, under the direction of Professor Henrique Roxo, is a part of the University of Rio de Janeiro, where Dr. Roxo teaches psychiatry with the assistance of Associate Professors Flavio de Souza, Rodrigo Ulysses, A. Morais Coutinho and Brahim Jorge and the collaboration of a few specialists in allied branches of medicine. The institute is provided with about 200 beds, which serve a large number of mental patients. As the most modern therapeutic methods (including insulin therapy, malariotherapy, metrazol shock, electric shock, occupational therapy, physical therapy, vitamin therapy and calcium therapy) are fully used at the institute, the results of treatment are considered excellent, having reached the rate of about 30 per cent cures during the last year. A main feature of the institute is that it is devoted to research as well as to teaching. Dr. Flavio de Souza has lately published several papers in which he presents the results of his studies on vitamins and mental diseases, the convulsive therapy by dicrotoxin associated with metrazol, improvements in convulsive therapy by metrazol (35 per cent dextrose solution), comparison between the clinical results of the metrazol shock and electric shock treatment and circulatory velocity and metrazol shock. Dr. Paulo Lacaz, in charge of the laboratory of

the institute, has recently published papers on the Takata-Ara reaction in neuropsychiatry, biochemical aspects of metrazol convulsions, glycid metabolism in schizophrenia, and some results in the application of interferometry. Basal metabolism in mental diseases is the special field of Dr. Ulysses, and Dr. Novais Filho deals with electroencephalographic studies in the diagnosis of psychoses.

Hospital News

The mayor of Rio de Janeiro, Dr. Henrique Dodsworth, himself a physician, has ordered that the Cascadura Maternity Hospital shall be known hereafter as the Fernando Magalhães Maternity Hospital. Dr. Magalhães was a leading obstetrician and professor at the University of Rio de Janeiro, whose death was reported in THE JOURNAL, April 8.

The administration of the city of São Paulo has completed the necessary arrangements to buy from the Bank of Brazil, custodian of enemy properties, the hospital now known as the Japanese Hospital of that city.

Dr. Fernando Paulino Jr., a noted young surgeon of Rio de Janeiro, recently resigned the post of director of the Miguel Pereira Hospital. This municipal hospital, with 50 beds, is a specialized institution for the surgical treatment of tuberculosis.

A fire has destroyed a section of the Municipal Hospital of the city of São Paulo. Firemen saved 40 hospital patients from injury.

Blood Typing of Brazilian Soldiers

Major Rodolfo Pereira dos Santos has cited the incidence of different blood groups among Brazilian soldiers of the Italian expeditionary forces. The blood was classified of 10,811 soldiers. Results were:

	Number		Per Cent
O type (universal donor)	5,047	or	46.68
A type	4,101	or	37.94
B type	1,285	or	11.88
AB type (universal receiver)	378	or	3.50
	10,811		100.00

Cesarean Section Because of Diaphragmatic Hernia

Professor Clovis Salgado of Belo Horizonte, Minas Gerais, observed a pregnant woman with diaphragmatic hernia in whom a cesarean section was performed at the onset of labor. The patient had a known tuberculous lung abscess six years previously, which emptied without operation. A left phrenectomy was performed one year later. An x-ray of the digestive tract revealed the diaphragmatic hernia showing the stomach herniated into the thorax. Tubal sterilization was performed at the time of the cesarean section.

Operability of Cancer of the Rectum

Dr. R. Pitanga Santos has a large proctologic practice in Rio de Janeiro and has investigated cancer of the rectum. At the last meeting of the National Academy of Medicine he presented several of his cancer patients. Speaking on the special topic of the operability of cancer of the rectum, Dr. Pitanga Santos pointed out his policy, followed during his long practice, of always operating in this condition, whatever the state of the patient. He declared that he has obtained good results in many cases considered hopeless by other doctors. Dr. Pitanga Santos insisted on the point that the mere age of the patient should not be considered a contraindication to surgery; he presented a woman of 84 who had been operated on at the age of 70 when she was considered by several other physicians as in a desperate plight. He presented several more aged patients who had been cured of cancer of the rectum. As a rule he employs a special surgical technic that he devised himself, using the peritoneal route, through a wide incision in three directions; this affords an ample operating field to enable the use of the electric knife, which he frequently employs.

Pathology and Clinical Treatment of the Thyroid

Under the direction of Dr. J. Peregrino Junior, the endocrinologic department of the Policlinica Geral of Rio de Janeiro, a medical institution which operates several large medical and surgical outpatient clinics, is now giving an extensive course on the pathology and clinical treatment of the thyroid. Drs. Moreira da Fonseca, Luis Feijó, Frederico MacDowell, Raymundo Brito and Xavier Pedrosa are teaching the different parts of the course. The emphasis given to the thyroid this year is explained by the increasing importance of this subject in Brazil. Of a thousand cases of glandular diseases attended at the endocrinologic department of the Policlinica, 38.7 per cent were diseases of the thyroid. In several thousand school children in the state of São Paulo Arruda Sampaio has found 18.2 per cent with goiter, and the rate reaches 60 per cent in some localities of the same state. Moreover, in spite of the fact that the thyroid is the best known of all the endocrine glands, it is in the diagnosis and treatment of its diseases that the general physician errs the most.

Brief Items

Dr. Annibal Varges, a specialist in physical medicine practicing in Rio de Janeiro since 1909, died recently at the age of 64. He was the first to suggest the simultaneous production of faradic and galvanic electric currents in the same apparatus as a therapeutic procedure.

Dr. Joaquim A. de Brito, head surgeon of the Municipal Emergency Hospital of Rio de Janeiro, and Dr. Flavio P. de Figueiredo, physician of the Division of Tuberculosis of the Department of Health of the same city, have left for the United States to spend some time, respectively, at the Massachusetts General Hospital and at the Municipal Tuberculosis Sanitarium of Chicago.

Major Arlino C. de Carvalho has been appointed ad interim director of the Brazilian Army Medical School.

Under the direction of Dr. Paulo Cesar de Andrade, the old Misericordia Hospital of Rio de Janeiro is being progressively enlarged and refitted and the services improved. The latest addition in the plan of improvement is the publication of a medical magazine under the title *Anais da Santa Casa de Misericordia do Rio de Janeiro,* to record the study of the cases treated in the hospital.

Dr. A. Saint-Pastous, president of the University of Porto Alegre, state of Rio Grande do Sul, recently resigned this position.

Dr. Raul Moreira, dean of the school of medicine of the University of Porto Alegre, has resigned his post. Dr. J. Pereira Filho, professor of medicine at the same school, has been appointed dean.

Col. Emmanuel Marques Porto, now stationed somewhere at the war front in Europe, has been appointed head of the Medical Service of the Brazilian Expeditionary Force. Lieut. Col. A. Marques Torres has been appointed head of the medical service of the first infantry division of the same force.

Marriages

TOM GROVER ORR JR., Kansas City, Mo., to Miss Jean De Vore Robertson of Marysville, June 24.

ROBERT MATTHEW BERNE to Miss Beth Adele Goldberg, both of New York, August 18.

DAVID OLAN MEEKER to Miss Marion Louise Ingraham, both of New York, August 8.

CHARLES O. PETERS to Mrs. Mabel Rindernecht, both of Erie, Pa., April 27.

WILLIAM C. F. SMITH, Erie, Pa., to Miss Louise Falk of Warren, May 20.

Deaths

Groesbeck Francis Walsh ✠ Fairfield, Ala.; Northwestern University Medical School, Chicago, 1902; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the American Public Health Association, American Academy of Tuberculosis Physicians, National Tuberculosis Association, American Trudeau Society, American Association of Industrial Physicians and Surgeons, American Academy of Physical Medicine, American Association for the Advancement of Science, Southern Medical Association and the Alabama Academy of Science; entered the medical service of the Isthmian Canal Commission in 1905 and remained in the service until 1910; during varying periods of the time had been in charge of the line hospitals at Culebra, Las Cascades, Miraflores and La Boca; served as adviser in health matters to the republic of Nicaragua and for many months as American Consul in the Nicaraguan port of Corinto; attached to the medical department of the Madeira Mamore Railroad, engaged in constructing a line around the cataracts of the Madeira River, from 1910 to 1911; during the major portion of the time had been in charge of surgical work at Candelaria Hospital, Amazonas, North Brazil; life member of the Madeira Mamore Society, formed by the survivors of this expedition; for a year had been in charge of the medical work of the Butters Mining Company at Divisadero in the republic of Salvador; chief of the laboratory division, Naval Operating Base, Hampton Roads, Va., during World War I, and was attached to the U. S. S. *Sierra* and the U. S. S. *Montgomery*, serving six months overseas on the Naval Transport U. S. S. *Orizaba;* assistant superintendent of the health department of the Tennessee Coal, Iron and Railroad Company since 1913 and chief of the medical clinic of the Employees' Hospital since 1919; died September 1, aged 66, of carcinoma of the urinary bladder.

Jerome **Kingsbury,** New York; Bellevue Hospital Medical College, New York, 1897; member of the Medical Society of the State of New York, American Dermatological Association and the American Academy of Dermatology and Syphilology; specialist certified by the American Board of Dermatology and Syphilology; professor of dermatology and syphilology at the New York Polyclinic Medical School and Hospital; for five years a member of the Seventh Regiment of the New York National Guard; served in France with the American Expeditionary Forces during World War I; colonel in the medical reserve corps; surgeon of the city patrol corps; formerly on the staff of the New York Skin and Cancer Hospital; director of dermatology at the Midtown Hospital; consulting dermatologist to the Harlem Eye and Ear Hospital, New York City Hospital, Welfare Island, North Eastern Dispensary and the Northern Dispensary; attending dermatologist to the New York Polyclinic Hospital, where he died July 15, aged 73, of cerebral hemorrhage.

Edward **Milum Barnes,** Tampa, Fla.; Memphis (Tenn.) Hospital Medical College, 1913; on the courtesy staff of the Tampa Municipal Hospital; died July 19, aged 62, of coronary thrombosis.

Bert **Montrose Barringer,** Emden, Ill.; Illinois Medical College, Chicago, 1904; member of the Illinois State Medical Society; on the staffs of the St. Clara's Hospital and the Evangelical Deaconess Hospital, Lincoln, where he died July 26, aged 77, of heart disease.

Edward **Theodore Biwer,** Boise, Idaho; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the Idaho State Medical Association; for two years a member of the health department of Chicago; for many years on the staff of St. Luke's Hospital; died July 22, aged 69.

Alexander **Walter Burke,** Chicago; Loyola University School of Medicine, Chicago, 1916; served in the medical corps of the U. S. Army in France during World War I; temporary medical examiner for the administrator of civil aeronautics from May 1943 to May 1944; flight surgeon at the Municipal Airport; died in a hospital at Memphis, Tenn., June 4, aged 57, of heart disease.

Joseph **Butler,** San Francisco; College of Physicians and Surgeons of San Francisco, 1905; died in the Southern Pacific Hospital in July, aged 71.

Edwin **Myron Case** ✠ Canton, Ohio; University of Nebraska College of Medicine, Omaha, 1933; served an internship at the St. Louis City Hospital, St. Louis; formerly a member of the Civilian Conservation Corps in Middle River, Minn., and Crystal Springs, Ark.; on the staff of the Aultman Hospital, where he died July 22, aged 44.

James Horace Chism, Carthage, Tenn.; Vanderbilt University School of Medicine, Nashville, Tenn., 1908; died in June, aged 59.

James Brewer Cochran, Dyersburg, Tenn.; University of Tennessee College of Medicine, Memphis, 1933; member of the Tennessee State Medical Association; served an internship and residency at the Methodist Hospital in Memphis; on the staff of the Baird-Brewer Hospital, where he formerly served as medical superintendent; died July 18, aged 34, of coronary occlusion.

William Henry Copeland, La Jolla, Calif.; Bellevue Hospital Medical College, New York, 1885; died July 3, aged 84.

John Joseph Cummings ✠ Worcester, Mass.; Columbia University College of Physicians and Surgeons, New York, 1899; member of the New England Obstetrical and Gynecological Society; for many years on the staff of St. Vincent Hospital; died in Misquamicut, R. I., July 9, aged 74, of heart disease.

Lucius M. Ellis, Houston, Texas; Baylor University College of Medicine, Dallas, 1912; member of the State Medical Association of Texas; died July 8, aged 65.

Homer Harvey Ewing, Willard, Ohio; Cleveland Homeopathic Medical College, 1898; member of the Ohio State Medical Association; past president of the Huron County Medical Society; chairman and for many years a member of the board of health of Huron County; on the staff of the Willard Municipal Hospital, where he died July 20, aged 75, of pneumonia.

Charles William Louis Hacker ✠ Albany, N. Y.; Albany Medical College, 1905; served at his alma mater as clinical assistant and instructor in surgical pathology, assistant in pathology and bacteriology, lecturer, instructor in surgery, and since 1937 associate in surgical pathology; member of the American Urological Association; fellow of the American College of Surgeons; associate attending surgeon, Albany Hospital, where he died July 7, aged 60, of acute peritonitis following chronic cholecystitis.

Otto William Hinn ✠ Cicero, Ill.; Bennett Medical College, Chicago, 1912; on the staffs of the Loretto and Walther Memorial hospitals, Chicago; died July 20, aged 59, of heart disease.

Bertalan Hoch, Jersey City, N. J.; Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs, Hungary, 1923; formerly assistant in medicine at his alma mater and its hospital; served an internship at the Jersey City Hospital; died July 10, aged 46, of coronary thrombosis.

John Dan Hogue ✠ Altoona, Pa.; Jefferson Medical College of Philadelphia, 1905; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served overseas during World War I; member of the staff of the Mercy Hospital; examiner for the Civil Aeronautics Authority; died in the Altoona Hospital July 19, aged 62, of carcinoma of the prostate.

Thomas J. Hollingsworth ✠ South Haven, Kan. (licensed in Kansas in 1901); past president of the Sumner County Medical Society; died July 10, aged 89, of arteriosclerosis.

José E. Igartua ✠ Aguadilla, P. R.; University of Maryland School of Medicine, Baltimore, 1911; past president of the Aguadilla District Medical Association; examiner for draft board during World War I; senior medical officer, department of radiology, Aguadilla District Hospital; died May 15, aged 54, of cardiovascular renal disease.

Dominick Philip Douglas Jackson ✠ Little Falls, N. J.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1932; on the staffs of the St. Joseph's Hospital, Paterson, and the Community Hospital, Montclair; died suddenly July 9, aged 39, of coronary thrombosis.

Milton Carr John ✠ Stuttgart, Ark.; University of Nashville (Tenn.) Medical Department, 1903; served as president of the Arkansas County Medical Society; formerly councilor of the Third District of the Arkansas Medical Society; a member of the board of trustees of the Arkansas Tuberculosis Sanatorium, State Sanatorium; died June 9, aged 67.

George Brinton Kessler, Elgin, Ill.; Tennessee Medical College, Knoxville, 1899; at one time health officer of Cowley County, Kan.; a member of the Selective Service board in Sullivan during World War I; died in St. Joseph Hospital July 28, aged 79, of chronic myocarditis and arteriosclerosis.

Frank Dietrich Kilgore, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1898; served during World War I; died June 24, aged 68.

Quintin Solomon Kocher, Bridgeville, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; school physician; on the staff of the Canonsburg General Hospital, Canonsburg; died in the Mercy Hospital, Pittsburgh, June 16, aged 73, of diabetes mellitus.

Amos D. Krewson, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1889; on the staffs of the Frankford and Northeastern hospitals; died July 8, aged 82, of angina pectoris.

Ralph Curtis Lowe, Media, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1928; member of the Medical Society of the State of Pennsylvania; served an internship and residency at the Women's Homeopathic Hospital, Philadelphia; died in the Hahnemann Hospital, Philadelphia, July 2, aged 42.

August E. Lundgren, Chicago; American College of Medicine and Surgery, Chicago, 1905; for thirty-eight years an examiner for the Metropolitan Life Insurance Company; on the staff of the University Hospital, where he died July 27, aged 71, of carcinoma of prostate.

William J. Merdian, Detroit; Detroit College of Medicine, 1890; formerly health officer of Grosse Pointe Park; physician for the draft board during World War I; died June 18, aged 75.

Marie A. Olsen ✠ Chicago; Woman's Medical College, Chicago, 1891; an Affiliate Fellow of the American Medical Association; on the staff of the Norwegian American Hospital, where she died July 11, aged 80, of cerebral hemorrhage.

Edmund Joseph O'Shaughnessy ✠ New Canaan, Conn.; University and Bellevue Hospital Medical College, New York, 1899; served during World War I; major in the medical reserve corps, not on active duty; chief, emergency medical service, New Canaan defense council; on the staff of the Stamford Hospital, Stamford, where he died July 2, aged 76, of cerebral hemorrhage.

Ernest Abram Moore, Bay Minette, Ala.; Louisville (Ky.) Medical College, 1906; served during World War I; formerly mayor of Bay Minette; died June 19, aged 62, of acute dilatation of the heart and chronic myocarditis.

Ralph Marcellus Morrill, Lincoln, Neb.; Bennett Medical College, Chicago, 1900; died suddenly June 30, aged 69.

Ellwood Oliver ✠ Pine Plains, N. Y.; Albany Medical College, 1894; on the courtesy staff of the Vassar Brothers' Hospital, Poughkeepsie; died July 6, aged 73, of diabetes mellitus and nephritis.

James William Parker ✠ Chicago; University of Illinois College of Medicine, Chicago, 1920; served an internship at the Grant and Chicago Lying-In hospitals; formerly a fellow in surgery at the Mayo Foundation in Rochester, Minn.; served during World War I; on the staff of the Chicago Memorial Hospital; died in the Illinois Central Hospital July 16, aged 49, of chronic intestinal obstruction.

George Alpha Potter, Danville, Ill.; Barnes Medical College, St. Louis, 1903; member of the Illinois State Medical Society; on the associate staff of the Lake View Hospital, where he died July 9, aged 68, of carcinoma of the prostate.

Jesse David Price, Michigan City, Ind.; Louisville (Ky.) Medical College, 1906; member of the Indiana State Medical Association; on the staff of St. Anthony Hospital, where he died July 3, aged 72, of cerebral hemorrhage.

Otis L. Ray ✠ Raleigh, N. C.; University College of Medicine, Richmond, 1899; for many years a member and chairman of the county board of commissioners; on the staff of the Rex Hospital, where he died July 4, aged 65.

Wilbur Fisk Reed, Cheboygan, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1877; member of the Michigan State Medical Society; for many years city health officer and county coroner; at one time physician at the State House of Correction and Reformatory, Ionia; died June 30, aged 93, of senility.

Fred Hooper Rhoades ✠ Hanover, Kan.; University Medical College of Kansas City, Mo., 1905; past president and secretary of the Washington County Medical Society; at one time secretary of the board of health in Altoona; clerk of the local school board for twenty-one years; health officer of Washington County; surgeon for the Union Pacific Railroad for many years; died in the Lutheran Hospital, Beatrice, Neb., June 19, aged 64.

Como Perry Richards, Everett, Wash.; University of Oregon Medical School, Portland, 1893; died May 20, aged 84, of uremia.

W. Herbert Scholtz, La Crescenta, Calif.; California Medical College, San Francisco, 1889; College of Physicians and Surgeons of San Francisco, 1901; died in Los Angeles June 9, aged 80.

Edgar Lane Tiner, Crystal City, Texas; University of Texas School of Medicine, Galveston, 1929; member of the State Medical Association of Texas; served an internship at the Santa Rosa Infirmary, San Antonio; city and county health officer; died in the Crystal Hospital June 22, aged 40, of chronic myocarditis and uremia.

Thomas Henry Trainor ✠ Maple Park, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1888; died July 5, aged 81, of heart disease.

LIEUT. (JG) JOHN H. BATES (MC), U.S.N.R., 1912-1944

Herbert Dillon Walker ✠ Elizabeth City, N. C.; University of Maryland School of Medicine, Baltimore, 1902; past president of the Seaboard Medical Society; honorary member and past vice president and treasurer of the Medical Society of the State of North Carolina; for many years associated with the U. S. Public Health Service; on the staff of the Albemarle Hospital; died in the Norfolk General Hospital, Norfolk, Va., July 7, aged 67, of cerebral hemorrhage.

Charles M. Walrath, Ellicottville, N. Y.; University of Buffalo School of Medicine, 1885; formerly a druggist; served as attending physician to the Erie County Penitentiary; formerly a trustee of the village, where he served as mayor, postmaster, health officer and member of the school board; died July 9, aged 88, of chronic myocarditis and arteriosclerosis.

John William Weber, Beverly Hills, Calif.; Columbia University College of Physicians and Surgeons, New York, 1918; at one time on the staffs of the New York State Hospital in Ray Brook and the Santa Clara County Hospital in San Jose; formerly medical director of the Ahwahnee Tri-County Tuberculosis Sanatorium in Ahwahnee; partner and medical director of aircraft workers medical plan at the Douglas Aircraft Company, Santa Monica; died in Long Beach July 4, aged 51, of coronary occlusion.

Arthur Ellwood Whittaker ✠ Zelienople, Pa.; University of Pittsburgh School of Medicine, 1912; served in the medical corps of the U. S. Army during World War I; on the staffs of the Rochester General Hospital, Rochester, and the Ellwood City Hospital, Ellwood City; author of "History of Ellwood City"; died July 4, aged 56, of coronary occlusion.

Joseph Carlin Williamson ✠ Columbus, Ohio; Medical College of Ohio, Cincinnati, 1899; died July 5, aged 69.

KILLED IN ACTION

John Hall Bates, New Preston, Conn.; Yale University School of Medicine, New Haven, 1941; served an internship at the Royal Victoria Hospital, Montreal, Que., Canada; commissioned a lieutenant (jg), medical corps, U. S. Naval Reserve, on April 20, 1942; began active duty on July 15, 1942; aged 31; killed in action in the Pacific area; presumptive date of death February 2, according to the Navy Department.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of "patent medicines," medical devices or cosmetics have agreed, following action by the Federal Trade Commission, to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products:

Aseptex.—In December 1943 Solinger & Sons Company, Inc., New York, stipulated with the Federal Trade Commission that it would cease representing that certain mattress ticking which it treats with this product possesses such bactericidal, germicidal or fungicidal properties as to make the fabrics resistant to germs, bacteria, fungi or vermin. The respondent also agreed to cease using the words "Sanitary" and "Aseptex" to describe such ticking, so as to imply that the fabrics will be effective in preventing, checking or removing agencies, such as filth and infection, which are injurious to health.

Formula SBS-11.—The Sugar Beet Products Company of Saginaw, Mich., which puts this out, entered into a stipulation with the Federal Trade Commission in January 1944, agreeing to discontinue certain misrepresentations in its advertising. Among these were that its product is effective in the prevention or treatment of skin irritations, dermatitis, chapping or soreness; that it will remove all bacteria from the skin or can be depended on to prevent infections or act as an antiseptic under the conditions of use, or that all commercial liquid soaps contain alcohol. The concern further agreed to cease representing that Formula SBS-11 will "remove 21.3% more bacteria than any other products available" or making any other claim attributing to the product an effectiveness, either in the removal of bacteria from the surface of the skin or in the prevention of skin infections, which is exaggerated or for which there is no proper support based upon any recognized or accepted scientific test.

Kulver's East Indian Hair Dressing.—In February 1944 Wilfred Scott, trading as Decco Barber Supply Company, Roxbury, Mass., stipulated with the Federal Trade Commission that he would cease representing that this product is a hair grower, produces long hair or in any way facilitates the growth of hair, and designating such preparation as "East Indian Hair Dressing" or otherwise representing that it is a product of, or contains ingredients imported from East India or any other foreign country.

Lee's Periodic Pills and Lee's Periodic Capsules.—In December 1943 one Milton L. Lieberman, trading as Lee Products and as Chemi-Culture Laboratories, Chicago, stipulated with the Federal Trade Commission that he would cease using the word "Periodic" or other similar connotation as a part of the trade designation of these products, or referring to the menstrual period in any way which might indicate that such preparations have predictable or reliable influence on that period. Further, he agreed to cease representing that either of the preparations is based on a well known formula that has been used successfully for such purpose; to cease using such designations as "XXX" or "triple strength" as indicative of the extra strength or unusual potency of such preparations, or employing the word "Laboratories" as a part of his trade name, until such time as he may actually own or operate a laboratory for his business. Lee also stipulated that in regard to any of his preparations containing a laxative, he would discontinue any advertisement which did not clearly reveal the potential danger in using such products in the presence of symptoms of appendicitis; as to any of his preparations containing apiol or pennyroyal, he agreed to discontinue any advertisements which did not disclose that the use of such products may produce irritation of the kidneys. It was provided, however, that if directions for use of each of such preparations, whether on the label or in the labeling, should contain specific and adequate warnings of its potential danger to health, such advertisements need bear only the warning, "Caution: Use Only as Directed."

Orjene Pure Shampoo, Vi-Vu Scalp Treatment, V-Kol and Couleur de Ton.—These are put out by the Orjene Company of New York. In a stipulation that it entered into with the Federal Trade Commission in November 1943, it agreed to cease representing that the shampoo is a cure or remedy for dandruff or is of any help in that condition beyond the removal of dandruff scales; that Vi-Vu will promote or restore a healthy growth of hair, remove local scalp irritations or renew life-giving nutriment; that V-Kol is a cure for itching scalp or skin, eczema or dandruff, or will aid nature in growing healthy hair. The respondent further agreed to discontinue any advertisement of Couleur de Ton which did not conspicuously reveal that the product contains ingredients which may cause skin irritation in certain individuals, and that the preliminary test outlined in the directions should first be made; that the product should not be used for dyeing the eyelashes or eyebrows, lest it cause blindness; provided, however, that it would be sufficient to advertise, "Caution: Use Only as Directed on Label" if such label should bear first-mentioned caution conspicuously and the accompanying labeling should give adequate directions for such preliminary testing before each application.

Presto Face Cream.—This is put out by T. L. Miller, trading as the T. L. Miller Manufacturing Company, New Orleans. In December 1943 he entered into a stipulation with the Federal Trade Commission, agreeing to cease representing that the use of this cosmetic will produce a clear, smooth skin or, by use of the word "Manufacturing" or similar words in its trade name or otherwise, that he owns or operates a company engaged in the business of manufacturing or compounding the preparation. Further, he agreed to discontinue any advertisement which represented that Presto Face Cream is safe to use, or failed to reveal that it should not be applied to an area of the skin larger than the face and neck at any one time; that too frequent applications or use over excessive periods of time should be avoided; that adequate rest periods between series of treatments should be observed; that the product should not be applied to areas where the skin is cut or broken, and that prior to its use a proper patch test should be made to determine whether the user is allergic or sensitive to the cream. It was provided, however, that such advertisements need only contain the statement: "Caution: Use Only as Directed" if the directions in the labeling carry a warning to the same effect.

Ultraviolet Ray Lamps.—In November 1943 Science Laboratories, Inc., and Sperti Electric Company, Inc., Cincinnati, entered into a stipulation with the Federal Trade Commission, agreeing to discontinue the following advertising misrepresentations for their models IC-77 and HI-41 lamps, or any of similar construction: That conditions of the modern age are such that the public is deprived of most of the benefits of sunlight or (by inference) that health depends on obtaining such radiation by artificial means; that the low death rate in summer as compared with the high death rate in winter is an index to the deficiency of ultraviolet light in winter; that the lamps offered for sale without adequate filter equipment produce ultraviolet rays, or that such radiation is comparable to sunshine. Further, they agreed to discontinue the misrepresentations that these lamps are indispensable for expectant or nursing mothers; that the lamps are an aid to skin health, or to a clear, unblemished complexion in general, or that their irradiation relieves all types of pains and aches or is an effective treatment or remedy for every variety of soreness and congestion.

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated D.D.N.J. and foods, F.N.J. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

Gloria Laxative Pills, or Rx S368230 Pills.—Parke, Davis & Company, Detroit, manufacturer, and John A. Smith Company, Oconomowoc, Wis., distributor. Various shipments between Jan. 13, 1941, and July 14, 1942. Composition: aloin and an extract of cascara sagrada. Misbranded because labeling failed to give any directions for use or to warn that pills were not to be taken in the presence of abdominal pain, nausea, vomiting or other symptoms of appendicitis, and that frequent or continued use might result in dependence on laxatives. Further misbranded because label failed to give common or usual name of active ingredients, since "Cascarin Bitter" is not the common or usual name of any substance.—[*D.D.N.J., F.D.C.761; September 1943.*]

My-X-Ym.—My-X-Ym Food Enzymes Products, Chicago. Shipped March 2, 1942. Composition: essentially ground senna pods, powdered milk, yeast, wheat bran, cornstarch, cacao powder, soybean tissues and sugars including dextrose and sucrose. Misbranded because labeling failed to warn adequately that, as a laxative, the product should not be taken in cases of nausea, vomiting, abdominal pain or other symptoms of appendicitis, or that frequent or continued use of a laxative might establish a habit; also misbranded because label falsely represented and suggested that My-X-Ym was an enzyme product and, when used as directed, would balance the weight of the body, be efficacious "for health" and supply a factor whose absence would result in many ailments; would cause the glandular system to function properly and would restore energy and vigor; would detoxify the system and prove an adequate treatment for a long catalog of disorders, including allergic eczema, pancreatic indigestion, acidosis, colitis, gallbladder trouble, neuritis, obesity and hemorrhoids, and prevent catarrhal conditions in many parts of the body.—[*D.D.N.J., F.D.C. 765; September 1943.*]

Vita-Port Vitamin B_1 Tonic.—Seized in May 1942 when offered for sale by Super Cut Rate Drugs, Washington, D. C. Composition (claimed): "Each fluid ounce contains thiamin hydrochloride (Vitamin B_1) . . . 4 mg. (Equivalent to 1330 International units) Alcohol 20 Per cent." Misbranded because label statements, "Here's Health! . . . Recommended for Underweight—Loss of Appetite Nervousness" were false and misleading, since the product would not be an effective treatment for such conditions.—[*D.D.N.J., F.D.C. 787; September 1943.*] Also declared misbranded under the provisions of the law applicable to foods, as reported in *F.N.J.* 3841.

Correspondence

RESEARCH IN THE SAN DIEGO ZOO

To the Editor:—In THE JOURNAL, July 8, page 729, is an item on the research center planned by the New York Zoo with the mention that the plan is "unique, . . . the first time any zoo has tried to collaborate with science." For the record would you please at some time note that there has been such a research hospital here for many years and that the New York authorities have been in communication with Mrs. Belle Benchley, in charge of the San Diego Zoo ("Life in a Man Made Jungle," "My Friends, the Apes") regarding the layout here.

We believe that this San Diego research institute has been unique. For many years any science worker whose project was approved by the committee could be assigned free laboratory space and the use of considerable equipment while his work progressed toward completion and publication, with whatever help he might ask from a committee of widely varied interests. For several years up until the war there were two research students who received a yearly fund for work applicable to zoo problems. Among workers who have published articles from this research institute are Dr. Jackson Kiser, Dr. Lawrence Penner, Dr. Robert Udall, Dr. Charles Schroeder, Dr. Leo Conti, Dr. George Kilgore, Dr. M. Wiener, Dr. F. D. McKinney, Dr. Jacob Traum, Dr. Joshua Bailey, Mr. Willys Doetschman and one of the founders, Dr. Harry Wegeforth. A note in THE JOURNAL might be of interest to medical men who wish to do research and would be glad to avail themselves of our facilities.

RAWSON J. PICKARD, M.D., San Diego.
Chairman, Biological Research Institute of the Zoological Society of San Diego, Balboa Park.

TREATMENT OF HEMANGIOMAS

To the Editor:—In THE JOURNAL, August 5, Dr. Merlin T. R. Maynard discussed my communication (May 27, p. 302) in which I commented on the article by Dr. George V. Kulchar on the treatment of hemangiomas in his article on "Benign and Malignant Tumors of the Foot" (March 18, p. 761).

Dr. Maynard insists that all angiomas sensitive to radiation should be treated from the day they are discovered if they show any tendency to grow. I want to reassert that simple strawberry and cavernous angiomas, contrary to general dermatologic opinion, do not require any treatment for the reason I previously stated (May 27, p. 302). This will be the subject of an article to appear in the *Journal of Pediatrics*. I should like to call the attention of pediatricians and all other physicians who care for children to the article by W. A. Lister (The Natural History of Strawberry Naevi, *Lancet* **1**:1429 [June 25] 1938) in which he relates that 93 strawberry and cavernous angiomas followed for a period of from one to seven years spontaneously involuted by the fifth year of life.

Dr. Maynard relates the case of a vascular lesion on the head of an infant, enlarging to the size of a grapefruit at the end of a year and requiring surgery because of hypertrophy of the heart. I cannot conceive, from a physiologic point of view, how a simple strawberry or cavernous angioma could produce a cardiac hypertrophy. If the vascular lesion actually was responsible for the cardiac hypertrophy, an arteriovenous aneurysm or communication must have been present and a bruit should have been detected on auscultation of the lesion.

C. RUSSELL ANDERSON, M.D., Los Angeles.

CANCER NOT ASCRIBED TO SINGLE INJURY

To the Editor:—There have been two recent editorials on Workmen's Compensation for Cancer Ascribed to Single Injury. The following quotation from C. A. Joll in Selected Papers for the Royal Cancer Hospital (Free), vol. 2, 1939-1940 is pertinent:

"Reliable evidence that a single trauma can produce in its train, early or late, a malignant tumor is entirely lacking, both experimentally and clinically. In my own twenty-five years' experience at the Royal Cancer Hospital and elsewhere, I have never seen a case of 'traumatic' cancer which on critical examination could be substantiated."

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University of California Medical School,
San Francisco.

"FIRST INSTITUTION FOR EPILEPTIC"

To the Editor:—In the July 29 issue of THE JOURNAL at the foot of page 897 is an item entitled "First Institution for the Epileptic." Unless one was well acquainted with the institutional treatment of epileptic patients one might be misled by this article. In the first place "the first institution specifically for epileptics was established in Gallipolis, Ohio, in 1890 and opened in 1893." This statement is true as far as the United States is concerned. Much older institutions were established for the epileptic at Ghent, Belgium, and at Bielefeld, Germany, where I visited the Bethel colony in 1908. One of the earlier institutions established in our country was the State Hospital for Epileptics at Parsons, Kan., in 1903. I happen to be quite well acquainted with this institution in that I was assistant physician and assistant superintendent there from January 1904 for almost three years. The Kansas institution was the fourth institution established for the treatment of the epileptic in the United States, if my memory serves me correctly. This institution admits and treats sane and insane epileptic patients.

A. L. SKOOG, M.D., Kansas City, Mo.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Sept. 9, page 126.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, Nov. 13-15. Part III. Various centers, September or October. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Part I. Various centers, Jan. 19. Final date for filing application is Oct. 21. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: February. Final date for filing application is Dec. 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison 5, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Various centers, Feb. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, January. Final date for filing application is Oct. 1. New York, June. Chicago, October, 1945. Final date for filing application is Dec. 1. Sec. Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 4-7. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PEDIATRICS: *Oral.* New York, April 14-15. Final date for filing application is Dec. 15. Chicago, May 19-20. Final date for filing application is Jan. 19. Sec., Dr. C. A. Aldrich, 115½ First Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: *Oral.* New York, December. Final date for filing application is Sept. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington 6, D. C.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Workman's Right to Procure Physician at Employer's Expense on Employer's Failure to Furnish Physician.—In the course of his employment, in May 1942 Caldwell sustained a low back sprain. Because he commuted from his home in New York City to his employer's plant in Bridgeport, Conn., the employer's first aid department instructed him to consult his family physician in New York City for necessary medical aid. The employer later paid compensation to the workman through Aug. 13, 1942, including the fees of Dr. Cohen, Caldwell's family physician. About the latter date the workman was sent to Bridgeport by his physician for further treatment by the employer's physician and was in turn discharged by him August 15 and sent home. Two weeks later the workman was unable to return to work in Bridgeport "because of pain and disability," and on August 18 he resumed treatments with Cohen. Cohen notified the employer of the facts and requested authority to treat the patient, but the employer made no reply until September 23, when a letter was received by Cohen stating that the workman had not yet been discharged by the employer's physician and that the employer disclaimed liability for Cohen's bill. Cohen nevertheless continued to render necessary care for the workman and eventually submitted a bill for $163, which admittedly was reasonable. Later the workman instituted proceedings for compensation under the workmen's compensation act of Connecticut and was awarded compensation, including the amount of Cohen's bill, by the commissioner who heard the matter. The employer appealed to the superior court of Fairfield County, Conn., which remanded the case back to the commissioner for a finding as to whether or not there was expressed or implied authority given by the employer for the treatments or whether or not in view of the previous conduct of the parties the employer was estopped from denying that he had authorized Cohen to render the necessary treatment to the workman. The commissioner found an estoppel and the employer again appealed to the superior court, which vacated the award of compensation to the extent of Cohen's bill. The workman then appealed to the Supreme Court of Errors of Connecticut.

On the second appeal the trial court considered only the narrow question of estoppel. Much broader considerations, said the Supreme Court of Errors, were involved. The applicable part of the workmen's compensation act (General Statutes Act 5232) provides as follows:

> The employer, as soon as he shall have knowledge of any such injury, shall provide a competent physician or surgeon to attend the injured employee, and in addition shall furnish such medical and surgical aid or hospital service as such physician or surgeon shall deem reasonable or necessary. In the event of the failure of the employer promptly to provide such . . . service, the injured employee may provide such . . . service at the expense of the employer.

This was the basis of the original award. That award still stands, the commissioner merely adding certain further findings when the matter was referred back to him by the trial court. When the employee was unable to go to his work at Bridgeport and went back to his New York physician, that physician reported the need of treatment, yet the employer did nothing from August 18 to September 23. Under these circumstances the commissioner could properly consider that under the statute the employee was entitled to get treatment from his own doctor at the employer's expense. The liberality with which we treat the employee's rights under the statute, said the court, is apparent in *Bongialatte* v. *H. Wales Lines Co.*, 97 Conn. 548, 550, 117 A. 696, 697. In that case the medical bills were incurred before the employer had notice of the injury. Nevertheless the court said

> If, in the absence of an immediate notice to the employer of the injury, he fails to provide medical aid, through ignorance of the injury or otherwise, and the employee employs medical aid, the employer is required to reimburse the employee for such expenditure if the same is reasonable as to amount and if the competency of the aid so employed is also reasonable so that the employer is not prejudiced thereby.

In the instant case, immediate notice was given, and the competency of the physician is not in question. See also *Thompson* v. *Towle*, 98 Conn. 738, 740, 120 A. 503; *Henderson* v. *Mazzotta*, 113 Conn. 747, 753, 157 A. 67. The underlying reason for the statute, sec. 5232, is stated in *Carney* v. *Plimpton Mfg. Co.*, 111 Conn. 401, 405, 150 A. 305, 307: it recognizes "the legislative idea that the employer as well as society benefit by the early restoration to health of the injured employee." The employer's appeal should have been dismissed.

Accordingly, the Supreme Court of Errors ordered, in effect, that the trial court dismiss the employer's appeal from the commissioner's award of compensation, which award included the physician's bill.—*Caldwell v. United States Aluminum Co., 38 A. (2d) 6 (Conn., 1944).*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 8-12. Dr. W. L. Benedict, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Academy of Pediatrics, St. Louis, Nov. 9-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Hospital Association, Cleveland, Oct. 2-6. Mr. George P. Bugbee, 18 East Division St., Chicago, Executive Secretary.

American Pediatric Society, Atlantic City, N. J., Sept. 25-27. Dr. Hugh McCulloch, 325 N. Euclid Ave., St. Louis 8, Secretary.

American Public Health Association, New York, Oct. 3-5. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Chicago, Sept. 24-29. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Association of American Medical Colleges, Detroit, Oct. 23-25. Dr. Fred C. Zapffe, 5 S. Wabash Ave., Chicago, Secretary.

Association of Military Surgeons of the United States, New York, Nov. 2-4, Col. James M. Phalen, Army Medical Museum, Washington 25, D. C., Secretary.

Colorado State Medical Society, Denver, Sept. 27-29. Dr. John S. Bouslog, 537 Republic Bldg., Denver 2, Secretary.

District of Columbia, Medical Society of the, Washington, Oct. 5-7. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.

Indiana State Medical Association, Indianapolis, Oct. 3-5. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis 4, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 17-20. Dr. Arthur G. Sullivan, 16 N. Carroll St., Madison, Wis., Managing Director.

International College of Surgeons, U. S. Chapter, Philadelphia, Oct. 3-5. Dr. Desiderio Roman, 250 South 17th St., Philadelphia, Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 2-4. Dr. William M. Korth, 1115 Grand Ave., Kansas City 6, Mo., Secretary.

Kentucky State Medical Association, Lexington, September 18-20. Dr. P. E. Blackerby, 620 S. Third St., Louisville, Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 27-29. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Midwestern Section of American Federation for Clinical Research, Chicago, Nov. 2. Dr. Richard H. Lyons, University Hospital, Ann Arbor, Mich., Secretary.

Mississippi Valley Medical Society, Peoria, Ill., Sept. 27-28. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Oklahoma City Clinical Society, Oklahoma City, Oct. 23-26. Dr. L. C. McHenry, 512 Medical Arts Bldg., Oklahoma City, Secretary.

Omaha Mid-West Clinical Society, Omaha, Nebraska, Oct. 23-27. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha 2, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Sept. 19-21. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh 22, Secretary.

Radiological Society of North America, Chicago, Sept. 24-29. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Virginia, Medical Society of, Richmond, Oct. 23-25. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond 19, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 18-20. Mr. Charles H. Crownhart, 110 E. Main St., Madison 3, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

14:253-306 (May) 1944

Myasthenia Gravis: Report of 2 Cases with Necropsy Findings. A. S. Giordano and J. L. Haymond.—p. 253.
*Pathologic Findings in Nerve and Muscle in Poliomyelitis. W. B. Dublin, B. A. Bede and B. A. Brown.—p. 266.
Phenol Studies: VII. Chronic Phenol Poisoning, with Special Reference to Effects on Experimental Animal of Inhalation of Phenol Vapor. W. B. Deichmann, K. V. Kitzmiller and S. Witherup.—p. 273.
Influence of Purified Diets on Toxicity of Promin. G. M. Higgins. —p. 278.
Jaundice in Amyloidosis of Liver. D. M. Spain and R. L. Riley.—p. 284.
Postmortem Studies in Mental Patients: Frequent Findings in Paranoid States. O. J. Pollak.—p. 289.
Carcinoid Tumors of Ileum (Argentaffinomas). C. E. McLeod.—p. 301.

Nerves and Muscles in Poliomyelitis.—Dublin and his co-workers studied biopsy specimens of muscle from 3 patients with poliomyelitis with the method of Ranvier. A boy aged 6 years, who was considered to have anterior poliomyelitis of nonparalytic type and to show "spasm" and "alienation," was studied by biopsy thirty-five days after the onset of symptoms. A youth aged 18 years with a moderate degree of paralytic weakness was studied by biopsy forty days after the onset of symptoms. A girl aged 12 years with severe flaccid paralysis was studied by biopsy forty-eight days after the onset of symptoms. Degeneration of nerve fibers, motor end plates and muscle fibers was seen in degree commensurate with the degree of paralysis. The irregularity of distribution was in keeping with the irregularity of distribution of injury to nerve cells of the gray matter of the spinal cord. Degeneration of nerve fibers consisted largely of failure to stain axons together with preservation of cellular elements of capsules of motor endings and of sheaths of Schwann. Atrophy of muscle fibers appeared in the form of pyknosis introduced by loss of cross striations and increase of longitudinal markings. Degeneration of nerve and muscle probably was secondary to injury to nerve cells of the spinal cord.

American J. Digestive Diseases, Fort Wayne, Ind.

11:173-204 (June) 1944

*Inhibition of Peptic Activity in Treatment of Peptic Ulcer. F. Steigmann and A. R. Marks.—p. 173.
Vitamins and Hormones in Nutrition. B. F. Sieve.—p. 179.
Changes in Sensitivity to Allergenic Foods in Arthritis. J. A. Turnbull.—p. 182.
Role of Fat Soluble Vitamins A and D in Nutrition. J. Buckstein. —p. 190.
Hypoglycemic Reaction with Convulsions in Ascariasis (Case Report). L. L. Frank.—p. 195.
Regional Enteritis. J. R. Phillips.—p. 197.

Inhibition of Peptic Activity in Peptic Ulcer.—Steigmann and Marks carried out the following procedures on patients admitted to Cook County Hospital with diagnosis of peptic ulcers: A Rehfuss tube was introduced into the stomach of the fasting patient, and an attempt was made to aspirate the entire gastric contents. With the tube in situ the patient ate four Uneeda crackers and drank one glass (200 cc.) of water. Samples of gastric juice were aspirated every fifteen minutes for two hours. The p_H and peptic activity were determined in each of the specimens. On succeeding days the same procedure was repeated but the patient received, shortly after taking the crackers and water, either (*a*) one capsule (100 mg.) of sodium lauryl sulfate, (*b*) two capsules of sodium lauryl sulfate, (*c*) 2 Gm. of calcium carbonate, (*d*) 8 cc. of an aluminum hydroxide preparation or (*e*) two tablets of a magnesium hydroxide compound. Each patient was tested on five successive days. A similar group of patients were given the usual ulcer diet plus one capsule of sodium lauryl sulfate every hour for twelve doses or more, depending on the patient's symptoms. These patients were observed during their stay in the hospital and later as outpatients. The authors found that calcium carbonate and aluminum hydroxide preparations, magnesium hydroxide and sodium lauryl sulfate caused decreased peptic activity simultaneously with a rise in the p_H. Calcium carbonate, the aluminum hydroxide preparation and magnesium hydroxide caused more pronounced peptic inhibition than sodium lauryl sulfate. The authors were unable to confirm the reported observations that sodium lauryl sulfate inhibits peptic activity in the presence of an unaltered p_H. Clinical use of sodium lauryl sulfate on a small number of patients on the usual dietary peptic ulcer management failed to reveal any superiority of this medication over some of the other medications used.

American Journal of Diseases of Children, Chicago

67:429-534 (June) 1944

Initial Stabilization of Diabetic Child. J. M. Brush.—p. 429.
*Erythroblastosis Fetalis: Proposed Definition and Clarification of Term. Madge Thurlow Macklin.—p. 445.
Oral Moniliasis in Newborn Infants. Nina A. Anderson, Dorothy N. Sage and E. H. Spaulding.—p. 450.
*Atelectasis Complicating Acute Poliomyelitis, with Involvement of Respiratory Muscles. M. Cooperstock.—p. 457.
Roentgenograms of Chest Taken During Pertussis. J. L. Kohn, I. Schwartz, J. Greenbaum and Mary M. I. Daly.—p. 463.
Levinson Ratio and Tryptophan Test: Comparative Value in Diagnosis of Tuberculous Meningitis. F. A. Kriete, H. C. Epstein and J. A. Toomey.—p. 469.
Prophylactic Value of Sulfathiazole Against Neonatal Gonococcic Conjunctivitis. M. Gleich, M. L. Blumberg and A. S. Mason Jr.—p. 472.
Comparison of Westergren and Kato Erythrocyte Sedimentation Rate Readings: Relation to Clinical Status of Children with Rheumatic Fever. J. B. McKinley and R. L. Jackson.—p. 474.

Erythroblastosis Fetalis: Clarification of Term.—Macklin defines erythroblastosis as a condition in which the blood of the fetus exhibits immature cells of the erythrocytic series which are not normal, either as to type or as to quantity, for the stage of development of the fetus. This condition may be elicited by numerous factors, may or may not be accompanied with hemolysis and may or may not be accompanied with extramedullary hemopoiesis. It includes hemolytic disease of the newborn as well as erythroblastosis due to factors other than hemolysis. When it is due to an antigen-antibody reaction there will be hemolysis with accumulation of iron in the fetal liver, and there will usually be persistent extramedullary hemopoiesis. This form of erythroblastosis is hemolytic disease of the newborn. In the majority of instances the hemolysis appears to be due to the Rh factor complex. Factors such as anoxemia cause erythroblastosis, as here defined, but not hemolysis. If they begin to operate early in development, extramedullary hemopoiesis will persist; if they begin just before term, formation of blood may be restricted to the bone marrow. A tentative explanation of the failure to find antibodies in the blood of the mothers of some fetuses showing erythroblastosis is advanced. It is based on a supposed immaturity of the antigen as it exists in the immature red cell, with a corresponding specificity of the antibody for this particular antigen. At present the demonstration of the antibody depends on its reaction with the antigen as it exists in the mature red cell. Testing of the blood of the mother with that of the fetus may demonstrate the presence of such antibodies. Another possible explanation is based on the recently discovered fact that there are at least six different Rh factors. Preparations of only the two commoner types of antigen are employed in the usual tests.

Atelectasis Complicating Acute Poliomyelitis.—According to Cooperstock a number of factors predispose to the development of atelectasis in paralysis of the respiratory muscles due to poliomyelitis. Foremost among them is the reduction of vital capacity. Also important is the fact that the ability to cough is impaired in poliomyelitis. Failure to rid the bronchial airways of exudate leads to bronchial occlusion and atelectasis. Should the obstructing material contain infective agents, as it invariably does, the situation is then fertile for the development of secondary pneumonia. It is thus apparent that in poliomyelitis with paralysis of the respiratory muscles there exists a constant threat of the development of grave pulmonary complications. For a patient already encumbered with serious liabilities,

the advent of such complications may well spell disaster. It is therefore of interest to record 4 instances, in 3 of which unexpected recovery took place. In all 4 atelectasis developed after the acute phase of the disease had passed, the pulmonary complications occurring from three weeks to one year after the admission of the patient to the hospital. Three of the patients were still in the respirator, and for the fourth patient the use of the respirator had been discontinued only four days prior to the occurrence of atelectasis. The patients had extensive paralysis of all extremities in addition to involvement of the muscles of respiration. The favorable outcome in the 3 patients who recovered followed the occurrence of a critical clinical picture due to the development of secondary pneumonia. Recovery appeared to depend on the favorable effect of sulfonamide compounds on the pneumonic process, permitting ultimate spontaneous clearing of the atelectasis. In the prophylaxis against pulmonary complications, avoidance of exposure to infections of the respiratory tract is of utmost importance. With the occurrence of such infections the early institution of chemotherapy may be effective in preventing the development of more serious complications. The continued use of the mechanical respirator under such circumstances is essential. Although not employed in the cases reported here, the early use of bronchoscopy for the relief of bronchial occlusion may minimize pulmonary complications under such circumstances. It is of interest that in patients already so seriously handicapped by poliomyelitis spontaneous clearing of atelectasis is possible.

American Review of Soviet Medicine, New York

1:389-480 (June) 1944

Medical Organization for Military Offensive. A. Georgevski, Y. Krichevski and B. Gorski.—p. 389.
*Tick Borne Encephalitis. A. A. Smorodintsev.—p. 400.
Acute Primary Hemorrhagic Meningoencephalitis. M. S. Margulis, V. D. Soloviev and A. K. Shubladze.—p. 409.
Psychologic Changes in Tick Borne or Spring-Summer Encephalitis. Ida B. Galant.—p. 428.
Modern Data on Frostbite. S. S. Girgolav.—p. 437.
Retrograde Changes in Spinal Cord in Frostbite of Extremities. D. I. Panchenko.—p. 440.
Uses of Greases and Ointments in Prevention of Frostbite. F. G. Krotkov.—p. 443.
Intravenous Injections by Drip Method in Treatment of Shock. A. F. Lepukaln.—p. 447.
Comparative Value of Three Blood Substitutes. I. P. Petrov, P. N. Veselkin, M. L. Dernovskaya and T. E. Petkun.—p. 450.

Tick Borne Encephalitis.—Smorodintsev reviews the work done in Russia on isolation of the virus causing tick borne or spring-summer encephalitis. The disease is characterized by an incubation period of eight to eighteen days, a temperature rise to 100.4 to 104 F., violent headache, pain in the nape of the neck, vertigo and vomiting. The predominant physical signs are meningismus and focal lesions of the central nervous system rapidly followed by paralysis of the limbs, neck and back. In some cases an ascending paralysis involves the cervical segments of the spinal cord, reaching the medulla, to develop bulbar palsy associated with dyspnea, cardiac arrhythmia, dysphagia and aphonia. The mortality rate ranges from 20 to 30 per cent. Death usually occurs between the third and the eighth day. Many convalescents are physically disabled by paralysis and atrophy of the cervical muscles and shoulder girdle. The patients who recover do not display Parkinson's syndrome occurring in von Economo's lethargic encephalitis. Spring-summer encephalitis in the European part of Russia takes a milder course, with a mortality rate of only 10 per cent. The histopathology of spring-summer encephalitis is characterized by intense inflammatory and degenerative changes of the nervous systems. The pia mater of both brain and spinal cord is always involved. The disease may be classified as an acute nonsuppurative meningoencephalopoliomyelitis. An acute serous exudate appears on the meninges, and the brain is softened and congested, while numerous hemorrhages appear on the brain stem, the medulla, and in the horns of the spinal cord. The causative agent is a virus which passes through the finest Berkefeld and Chamberland filters. It belongs to type B of seasonal encephalitis. The virus cannot be neutralized by the serums of patients recovered from the lethargic Economo encephalitis. It also differs from the St. Louis virus in its antigenic and immunogenic properties. According to recent observations by Casals, spring-summer encephalitis virus bears a close relationship to louping ill virus through complement fixation, neutralization and intraperitoneal cross resistance tests. Intracerebral cross resistance tests, on the other hand, were negative. Neither spring-summer encephalitis nor louping ill virus appeared to be related to the viruses of Japanese, St. Louis and West Nile types of encephalitis. Tick borne encephalitis is distinctly seasonal. It begins at the end of April and assumes epidemic proportions in May. Prior to May and after August there occur only sporadic cases. Moderate atmospheric temperature and relatively high humidity favor the development of the disease. The greatest incidence and mortality occur in new settlements situated in slightly cultivated forests. The clinical and epidemiologic characteristics of tick borne spring-summer encephalitis distinguish it from the Japanese and the St. Louis types, which are most prevalent during the dry, hot months of August and September. The authors list epidemiologic and experimental data that indicate transmission of the disease through ticks, especially Ixodes persulcatus. The transmission of the virus can be traced from infested larvae and nymphs to rodents or birds, which in turn transmit the virus to larvae and nymphs, thus completing the cycle. Every new animal species, including man, entering the forests is exposed to encephalitis. The possibility of producing artificial immunity in men is supported by the fact that convalescence from encephalitis is linked with a lasting immunity. There are prospects for the prophylaxis and treatment of encephalitis by serums obtained from convalescent or hyperimmunized animals. Serotherapy of encephalitis was studied in the endemic areas during the last five years. The serums obtained from convalescents or hyperimmunized horses produced favorable results in a number of cases when intraspinal injection of 10 to 15 cc. was supplemented with intramuscular injection of 30 to 50 cc. of serum. Immediate intramuscular injection of 40 to 50 cc. of serum is indicated for persons bitten by ticks in the endemic areas.

Archives of Neurology and Psychiatry, Chicago

51:501-596 (June) 1944

Sweat Secretion in Man: VI. Spinal Reflex Sweating. C. F. List and A. D. Pimenta.—p. 501.
*Effects of Variations in Intracranial Pressure. A. J. Kahn.—p. 508.
Suppression of Motor Response in Man. H. W. Garol and P. C. Bucy.—p. 528.
Abscess within Spinal Cord: Review of Literature and Report of 3 Cases. P. K. Arzt.—p. 533.
Psychic Deafness in Children. E. Froeschels.—p. 544.
Prolonged Insulin Coma in Treatment of Schizophrenia. T. D. Rivers and H. P. Rome.—p. 550.
Fatal Circulatory Failure Caused by Electric Shock Therapy. H. W. Jetter.—p. 557.
Racial and Sexual Incidence of Primary Intracranial Tumors: Statistical Study of 133 Cases Verified by Autopsy. H. P. Newbill and G. C. Anderson.—p. 564.
Use of Furmethide in Testing Sweat Secretion in Man. S. A. Guttman.—p. 568.
Colloid Cyst of Third Ventricle. E. W. Shannon.—p. 570.

Effects of Variations in Intracranial Pressure.—In the first part of this study Kahn is concerned with the effect of raised intracranial pressure on consciousness, which he studied in dogs. Distilled water was perfused into the anatomic central end of the common carotid artery, and observations were made on whether or not this procedure would render the animal comatose. Kymographic records were simultaneously taken of the respiration, the general carotid blood pressure, the cerebrospinal fluid pressure in the cisterna magna and the pressure in the brain tissue (intracerebral pressure). It was at first assumed that the pressure in the lateral ventricles was being accurately recorded by measurement of the cisternal pressure. The fallacy of this assumption was later demonstrated by some chance measurements of the intraventricular pressure. In subsequent experiments the intraventricular pressure was simultaneously recorded with a mercury manometer. Perfusion of distilled water into the anatomic central end of the common carotid artery resulted in elevation of the intracerebral and intraventricular pressures to levels above the cisternal pressure. When the intracerebral and the intraventricular pressure approached the level of the diastolic blood pressure, dire respiratory and circulatory effects were produced, ending in the death of the animal. Respiration first became labored and then stopped, and circulatory failure was preceded by pronounced

slowing of the pulse (heart rate) and terminal hypertension in 50 per cent of the experiments. The experiments reported in the second part of this paper were undertaken to study the mechanism involved in the production of these effects on respiration and circulation. It was found that the respiratory and circulatory embarrassment associated with high levels of intraventricular and intracerebral pressure could be relieved by ventricular drainage, which sharply lowered both the intraventricular and the intracerebral pressure. No circulatory or respiratory embarrassment occurred when both the cisternal and the intraventricular pressure were at high levels, but medullary embarrassment appeared soon after the cisternal pressure was lowered, the intraventricular pressure alone remaining high. In animals in which the intraventricular pressure was abruptly raised while measures were taken to keep the cisternal pressure low, the general tendency was toward a distinct slowing in heart rate. The hemodynamic effects in these experiments were not constant, the general tendency being toward a decrease in the blood pressure. The respiratory depression and the circulatory effects resulting from these abrupt increases in intraventricular pressure were eliminated by raising the cisternal pressure or by lowering the intraventricular pressure. The ill effects of increased intraventricular pressure are due to herniation of the medulla into the foramen magnum. This herniation was experimentally observed in dogs. The possibility also exists that the respiratory and circulatory effects were due to a herniation of the mesencephalon through the incisura tentorii. The fallacy of the cisternal pressure being regarded as a measure of the intraventricular and the intracerebral pressure when cerebral edema and/or the possibility of internal hydrocephalus exists receives emphasis from the results of the water perfusion experiments. In internal hydrocephalus consequent to severe cranial trauma, use of lumbar puncture as a means of relief of intracranial tension is invalid and contraindicated. Ventricular drainage is indicated for such a condition. Ventricular drainage, together with artificial respiration and administration of isotonic solution of three chlorides (infused into the central end of the common carotid artery), was efficacious in restoring respiration and increasing the blood pressure after severe medullary trauma in the water perfusion experiments.

Archives of Physical Therapy, Chicago

25:321-384 (June) 1944

Medicolegal Aspects of Physical Medicine. H. H. Buckelew.—p. 327.
Resuscitation of the Drowned Today. F. C. Eve.—p. 332.
Rationale for Electrodiagnosis and Electrical Stimulation in Denervated Muscle. S. L. Osborne, F. S. Grodins, E. Mittelmann, W. S. Milne and A. C. Ivy.—p. 338.
*Induced Resistance to Prolonged Sun Exposure. J. L. Rudd.—p. 345.
Psychobiologic Factors in Kenny Concept of Infantile Paralysis. C. Bohnengel.—p. 350.
Present Status of Ultraviolet Blood Irradiation (Knott Technic). G. Miley.—p. 357.

Induced Resistance to Prolonged Sun Exposure.—Rudd investigated whether sunburn and its complications might be prevented by the use of small graduated doses of artificial ultraviolet radiation by the mercury vapor quartz lamp. He describes 3 cases as examples of the reaction to solar radiation after a series of hot quartz lamp applications of ultraviolet radiation. He stresses that such protection is particularly important to the person with light, tender skin or with any other form of sensitivity to solar radiant energy. If large numbers of service men needed this protection, mass treatments could be given with little cost or loss of time from duty.

Bulletin of Johns Hopkins Hospital, Baltimore

74:229-274 (April) 1944

Significance of Electrocardiographic Abnormalities in Young Adults. Caroline Bedell Thomas.—p. 229.
Congenital Chickenpox with Disseminated Visceral Lesions. Ella H. Oppenheimer.—p. 240.
*Observations on Histidine Deficient Diet in Man. A. A. Albanese, L. E. Holt Jr., Jane E. Frankston and Virginia Irby.—p. 251.
Proper Attention to Role of Emotional and Social Factors in Illness as New Step in Public Health. G. C. Robinson.—p. 259.

Histidine Deficient Diet in Man.—Albanese and his collaborators studied the human requirement for histidine in 3 normal adult males submitted to an experimental diet consisting of fats, starches and certain fruits and vegetables of low protein content which provided approximately 10 per cent of the daily nitrogen intake. The remaining 90 per cent was supplied as a histidine deficient casein digest. None of the three subjects developed clinical symptoms or changes in their blood chemistry or morphology. They all lost weight. The nitrogen balance remained positive throughout, and the excretion of histidine in the urine showed no reduction. The histidine deficient state was characterized by the appearance of an abnormal metabolite in the urine, a substance giving a green reaction with the Sharlit indican test. The results indicate that histidine is not essential for the maintenance of nitrogen equilibrium in the adult human being. The authors hesitate to conclude that histidine is unessential for man until further studies have clarified the picture. The loss of weight remains to be explained. The abnormal metabolite in urine in the histidine deficient period does not provide evidence of the essentiality of histidine. Apart from the question of the essentiality of the histidine for the adult is the question of the need of the growing organism for this amino acid.

Georgia Medical Association Journal, Atlanta

33:167-200 (June) 1944

*Pneumoperitoneum: Form of Compression Therapy in Treatment of Pulmonary Tuberculosis; Review of 154 Cases. H. E. Crow.—p. 167.
Madura Foot: Report of Youngest Case on Record. D. R. Venable and J. H. Gaston.—p. 174.
Treatment of Thrombophlebitis. C. E. Rushin.—p. 178.
Importance of Rectal Examinations. A. M. Phillips.—p. 183.
Treatment of Hemorrhoids. H. H. Askew.—p. 186.

Pneumoperitoneum in Treatment of Pulmonary Tuberculosis.—Crow reports 154 cases treated at the Georgia State Tuberculosis Sanatorium between August 1937 and June 1942. Pneumoperitoneum with consequent elevation of the diaphragm produces partial and often optimum compression of one or both lungs. Temporary phrenic nerve interruption prior to inducing pneumoperitoneum aids in securing greater elevation of the diaphragm. The majority, namely 122 of the 154 cases, were far advanced with a poor or hopeless outlook. There were 26 deaths during the treatment, 47 patients discontinued the treatment after a few refills and some could not be reached. Of the 77 cases in which treatments were continued, 10 were unimproved, 41 were improved and 26 were quiescent. Exudative lesions, particularly those in the middle third of the lung, showed the greatest amount of response. The effects on the lung and pleurae from pneumoperitoneum are much less likely to result in serious complications than are those of pneumothorax. A well established pneumoperitoneum will not reduce the apicobasal diameter of the lung more than 40 to 60 per cent and the total volume from 50 to 65 per cent, but the remaining partially inflated portion of the lung above the paralyzed hemidiaphragm is well splinted and the pressure against it is practically constant. The paralyzed hemidiaphragm, once it is well elevated, almost always remains practically stationary, regardless of the position of the patient.

Journal of International College of Surgeons, Chicago

7:171-256 (May-June) 1944

Activities of Veterans Administration. F. T. Hines.—p. 171.
Anesthesia in War Surgery. F. Graña.—p. 175.
Present Treatment of Wounds and Burns. R. Hayden.—p. 179.
Surgeons and Events. M. Thorek.—p. 191.
*Blast Injuries. B. W. Hogan.—p. 193.
Mediastinal Wounds Caused by Explosives. E. Erkul.—p. 200.
Electrosurgical Treatment of Carcinoma of Rectum. A. H. Roffo and F. F. Carranza.—p. 202.
Transplantation of Omentum in Closure of Cerebrospinal Fluid Fistula. F. Mandl.—p. 219.
Generalization of Spinal Anesthesia. D. F. Fierro.—p. 221.
Occurrence of Pseudotumors in Synovial Membrane of Knee Joint. H. Milwidsky.—p. 227.
Hypernephroid Tumor of Right Kidney, with Metastatic Lesion in Right Scapula. C. E. Nagel.—p. 235.
Acute Cholecystitis. F. S. Mainzer.—p. 241.

Blast Injuries.—Hogan discusses some observations on 35 cases of blast injuries admitted to the hospital after Pearl Harbor. He recommends conservative treatment but states that recent perforation, gangrene of a segment of bowel and abscess formation demand surgical intervention. "War neurosis" and psychotic interludes have been attributed to exposure to concussions. Optic injuries, corneal and retinal hemorrhage, retinal

separation and presence of exudates have all been attributed to the effect of "blast" but have never been seen in animal experimentation. Injury to the ears is common. Underwater concussion may cause hemorrhage within any of the sinuses, sphenoidal as well as malar and frontal. Apparently injury to these sinuses may be of such violence as to fracture the bone. Fractures are supposedly due to the violent displacement of the limbs against some hard object rather than due to blast per se. Since the blast wave falls off in intensity very rapidly, every effort should be made to swim as far away from a source of concussion as possible, even a few yards theoretically constituting the difference between safety and fatal injury. The intensity of the concussion wave generated by explosions in air is greatly diminished in depressions, trenches and foxholes, so that "hitting the dirt" is a protection from blast as well as from the resulting shrapnel.

Journal of the Mount Sinai Hospital, New York

11:1-64 (May-June) 1944

William Henry Welch Lectures: I. Studies on Dehepatized Animal; Review. F. C. Mann.—p. 1.
*Effect of Certain Quinones, Aldehydes and Ketones on Blood Pressure of Hypertensive Mammals. B. S. Oppenheimer, S. Soloway and B. E. Lowenstein.—p. 23.
Essays on Biology of Disease. E. Moschcowitz.—p. 29.
Massive Pulmonary Embolism: I. Based in Part on Study of 88 Fatal Cases. H. Neuhof and S. H. Klein.—p. 32.
Life's Later Years: Studies in Medical History of Old Age. F. D. Zeman.—p. 45.

Effect of Quinones, Aldehydes and Ketones on Blood Pressure.—According to Oppenheimer and his associates there are five quinones which have more or less antipressor properties when tested on hypertensive mammals. These are (1) sodium rhodizonate, (2) sodium thymoquinone sulfonate, (3) sodium beta-naphthoquinone-4-sulfonate, (4) 2,6-dichloroquinone and (5) 2-methyl-alpha-naphthoquinone. The first three of these proved to be toxic when tested on hypertensive dogs. Oral administration of sodium beta-naphthoquinone-4-sulfonate to 3 hypertensive dogs was ineffective. A search among the dialdehydes and diketones for effective antipressors on hypertensive rats and dogs has yielded one promising lead in 1,4-cyclohexandione. In the doses employed so far, 1,4-cyclohexandione has not produced toxic effects. Further studies are now in progress.

Journal of Nutrition, Philadelphia

27:435-522 (June) 1944

Study of Riboflavin and Thiamine Requirements of Children of Preschool Age. Helen Oldham, Frances Johnston, Sarah Kleiger and H. Hedderich-Arismendi.—p. 435.
Vitamin Interrelationships: III. Influence of Suboptimum Doses of Thiamine on Urinary Excretions of Riboflavin. B. Sure.—p. 447.
Associative Dynamic Effects of Protein, Carbohydrate and Fat. E. B. Forbes and R. W. Swift, with technical collaboration of Ann Greenwood Buckman, Jane E. Schopfer and Mary T. Davenport.—p. 453.
Bioassay of Vitamin E. Gladys A. Emerson and H. M. Evans.—p. 469.
Congenital Malformations Induced in Rats by Maternal Nutritional Deficiency: VI. Preventive Factor. J. Warkany and Elizabeth Schraffenberger.—p. 477.
Absence of Rapid Deterioration in Men Doing Hard Physical Work on a Restricted Intake of Vitamins of B Complex. A. Keys, A. Henschel, H. L. Taylor, O. Mickelsen and J. Brozek.—p. 485.
*Dietary Protein and Physical Fitness in Temperate and Hot Environments. G. C. Pitts, F. C. Consolazio and R. E. Johnson, with technical assistance of J. Poulin, A. Razoyk and J. Stachelek.—p. 497.
Studies on Comparative Nutritive Value of Fats: IV. Negative Effect of Different Fats on Fertility and Lactation in Rat. H. J. Deuel Jr., E. Movitt and Lois F. Hallman, with the technical assistance of Evelyn Brown.—p. 509.

Dietary Protein and Physical Fitness in Temperate and Hot Environment.—According to Pitts and his associates recommendations for the daily protein intake of men who are doing hard physical work have ranged from 50 to 165 Gm. The present figure given by the National Research Council of 70 Gm. daily represents a compromise. For men working in hot environments recommendations are commonly made that protein intake be restricted on the ground that its high specific dynamic action imposes an unnecessary load on the heat dissipating mechanisms of the body. However, men who are accustomed to working in the heat prefer a diet containing liberal quantities of meat. Good examples are harvesters, miners and baseball players. The authors made a study of subjects subsisting on three levels of protein intake. Particular attention was paid to the subject's physical fitness for work in temperate and in hot environments. Three subjects were studied under both temperate and tropical conditions while reclining, standing and marching. The urinary nitrogen excretion in grams per day averaged 18.5 during the high protein period, 9.5 during the low protein period and 12.9 and 13.5 during the normal periods before and after the experiment, respectively. There were minor changes in body weight, with a maximum during the high protein period. The plasma protein level showed no significant changes. Physical fitness under temperate conditions showed no changes attributable to dietary protein level. Performance of work in both hot dry and hot moist environments showed no changes attributable to dietary protein level. In both cases, however, improvements due to training and acclimatization were observed. Metabolism while reclining and while standing was not significantly different in the high and low protein periods. Metabolism while marching was slightly lower in the low protein period. However, this was a physiologically insignificant change. It is concluded that, even though protein does have a high specific dynamic action, the theoretical objections heretofore raised against a high protein diet in hot environments are unjustified. Protein intake may vary widely from 75 to 150 Gm. daily without effect on performance of intermittent work in the heat.

Journal of Pediatrics, St. Louis

24:603-730 (June) 1944

Comparison of Newborn Infants with Erythroblastosis Fetalis with Those Born to Diabetic Mothers. H. C. Miller, R. D. Johnson and S. H. Durlacher.—p. 603.
Prescribed Diets for Normal Children. J. D. Boyd.—p. 616.
Promin in Treatment of Tuberculous Meningitis. W. J. Morrow, H. C. Epstein and J. A. Toomey.—p. 623.
Respiratory Shift in Epigastric Abdominal Wall—Physical Sign Seen with Complete Unilateral Paralysis of Diaphragm in Infants and Children. J. S. Light.—p. 627.
Autonomic Nervous System Imbalance of Whole Gastrointestinal Tract in Newborn Infant. G. N. Krost.—p. 635.
*Development of Antibody Following Vaccination of Infants and Children Against Pneumococci. H. L. Hodes, J. F. Ziegler Jr. and Helen D. Zepp.—p. 641.
Gonorrheal Peritonitis in Children. D. L. Maguire Jr.—p. 650.
Purulent Pericarditis Complicating Pneumonia: Recovery in an Infant Following Therapeutic Aspiration and Development of Pneumopericardium. M. Cooperstock.—p. 656.
Rheumatic Pericarditis in Early Childhood. S. L. Ellenberg and H. Cook.—p. 662.
Whooping Cough Mortality. M. J. Fox and Elizabeth M. Knott.—p. 671.
Fulminating Meningococcemia (Waterhouse-Friderichsen Syndrome): Report of 3 Cases with Autopsy and 1 with Recovery. M. H. Strick.—p. 675.
Sedimentation Rate and White Blood Count in Acute Poliomyelitis. S. Rosin, W. P. Frank and P. M. Hamilton.—p. 679.
Role of Surgical Mask in Prevention of Cross Infections in Hospital Nurseries for Newborn Infants. H. Abramson.—p. 684.
Medical Social Work in Epidemic of Poliomyelitis. Alice A. Grant.—p. 691.

Development of Antibody Following Vaccination Against Pneumococci.—Hodes and his collaborators studied the production of pneumococcus mouse protective antibodies in the serum of a number of infants and children following vaccination with heat killed type I and type VI pneumococci. Most of the subjects were given the vaccine by intradermal inoculation. In a small group type I vaccine was administered by inhalation of a fine mist sprayed from a nebulizer. The patients were children admitted to the Harriet Lane Home or to Sydenham Hospital in Baltimore. The group was made up in part of children who had recently recovered from an acute infection and in part of those admitted to the hospital for study of some neurologic or metabolic disorder. The ages of the children varied from 2 weeks to 13 years. Among children over 2 years of age intradermal inoculation of a dose of heat killed type I pneumococci which did not cause systemic reactions or serious local reactions was followed in nearly every instance by an abrupt rise in serum mouse protective antibody titer. The level of antibody attained appears to be of the same order of magnitude as has been reported in adults following type I pneumococcus pneumonia treated with sulfonamides. The rise in antibody titer following vaccination persisted for at least several months. With few exceptions no rise in antibody titer following intradermal vaccination with type I pneumococci was

demonstrated among infants under 2 years of age. Inhalation by children over 2 years of age of a spray of killed type I pneumococci was followed in a few instances by a significant rise in mouse protective antibody titer. However, this method of vaccination was unreliable and cumbersome. Intradermal vaccination with type VI pneumococcus vaccine yielded equivocal results. Among children over 2 years of age a high prevaccination titer of mouse protective antibody against type VI pneumococcus was found much more often than against type I pneumococci.

Journal Pharmacology & Exper. Therap., Baltimore

81:101-208 (June) 1944

Treatment of Experimental Renal Hypertension with Renal Extracts. G. E. Wakerlin, C. A. Johnson, W. G. Moss and M. L. Goldberg. —p. 101.

Adrenolytic and Sympatholytic Actions of Yohimbine and Ethyl Yohimbine. F. F. Yonkman, D. Stilwell and R. Jeremias.—p. 111.

Toxicologic Studies of Phthalylsulfathiazole. P. A. Mattis, W. M. Benson and E. S. Koelle, with technical assistance of Ethel Williams and S. E. McKinney.—p. 116.

Inhibitory Effect of Sulfonamides on Action of Nicotine in Isolated Intestine. E. P. Pick, G. W. Brooks and K. Unna.—p. 133.

Toxicity and Treponemicidal Activity of Amide-Substituted Phenyl Arsenoxides and Their Derivatives. H. Eagle, R. B. Hogan, G. O. Doak and H. G. Steinman.—p. 142.

Pharmacology and Chemistry of Substances with Cardiac Activity: III. Effect of Simple Unsaturated Lactones and *t*-Butyl Hydrogen Peroxide on Isolated Frog Heart. R. Mendez.—p. 151.

Plasma Concentrations Following Oral Administration of Single Doses of Principal Alkaloids of Cinchona Bark. E. P. Hiatt.—p. 160.

Studies on Shock Induced by Hemorrhage: VII. Destruction of Cozymase and Alloxazine Adenine Dinucleotide in Tissues During Shock. Margaret E. Greig.—p. 164.

Antispasmodic Activity of Some 4-Morpholinealkyl Esters: I. Toxicity, Isolated Smooth Muscle Effects and Spasmolytic Activity on Ileum of Anesthetized Dogs. H. F. Chase, A. J. Lehman and F. F. Yonkman. —p. 174.

Comparative Anoxemic Effects from Carbon Monoxide Hemoglobin and Methemoglobin. D. Lester and L. A. Greenberg.—p. 182.

Chemotherapy of Filariasis in Cotton Rat by Administration of Neostam and of Neostibosan. J. T. Culbertson and H. M. Rose.—p. 189.

Relationship of Chemical Structure of Sympathomimetic Amines to Ventricular Tachycardia During Cyclopropane Anesthesia. O. S. Orth, J. W. Stutzman and W. J. Meek.—p. 197.

Evaluation of Influence of Succinate and Malonate on Barbiturate Hypnosis. K. H. Beyer and A. R. Latven.—p. 203.

Maine Medical Association Journal, Portland

35:81-106 (May) 1944

Tabulated Report of 8 Bacterial Endocarditis Cases. C. W. Steele and J. Gottlieb.—p. 81.

35:107-134 (June) 1944

Preserve Present System of Medical Care. A. H. Scolten.—p. 107.

Medicine, Baltimore

23:105-214 (May) 1944

Neurofibromatosis (von Recklinghausen) and Osteitis Fibrosa Cystica Localisata et Disseminata (von Recklinghausen): Study of Common Pathogenesis of Both Diseases; Differentiation Between "Hyperparathyroidism with Generalized Decalcification and Fibrocystic Changes of Skeleton and Osteitis Fibrosa Cystica Disseminata." S. J. Thannhauser.—p. 105.

Filariasis Due to Wuchereria Bancrofti. L. E. Napier.—p. 149.

Meningeal and Vascular Syphilis of Spinal Cord. R. D. Adams and H. H. Merritt.—p. 181.

New England Journal of Medicine, Boston

230:749-784 (June 22) 1944

Management of Blood Bank at Massachusetts Memorial Hospitals: New Problem of Rh Typing. F. E. Barton.—p. 749.

Functional Vomiting as Interpreted by Auscultation of Abdomen. N. C. Stevens.—p. 753.

Practical Details in Management of Sterility, with Special Reference to Endocrine Factors. S. R. Meaker, C. H. Lawrence and S. N. Vose. —p. 755.

Boston Medical Library. H. R. Viets.—p. 760.

Liver Intoxication. C. M. Jones.—p. 766.

230:785-818 (June 29) 1944

Perforated Peptic Ulcer: Follow-Up Study of 100 Cases. A. C. Williams. —p. 785.

Poliomyelitis on Isthmus of Panama. C. E. Taylor.—p. 790.

X-Ray Therapy of Heart in Patient with Leukemia, Heart Block and Hypertension: Report of Case. H. Blotner and M. C. Sosman.—p. 793.

Spontaneous, Threatened and Habitual Abortion: Their Pathogenesis and Treatment. A. T. Hertig and R. G. Livingstone.—p. 797.

New Jersey Medical Society Journal, Trenton

41:221-262 (June) 1944

Common Disorders of Digestive Tract: Clinical and Roentgenologic Study of Additional 500 Private Cases. S. W. Johnsen.—p. 226.

Vincent's Angina—Public Menace. C. V. Craster.—p. 230.

Venereal Disease Control in Industry. G. S. Usher.—p. 234.

Analysis of 100 Puerperal Deaths in Essex County. A. Meurlin.—p. 239.

New York State Journal of Medicine, New York

44:1281-1390 (June 15) 1944

*Measures to Prevent and Control an Epidemic of Ringworm of Scalp. G. M. Lewis, S. H. Silvers, A. C. Cipollaro, E. Muskatblit and H. H. Mitchell.—p. 1327.

Measures to Control an Epidemic of Ringworm of Scalp.—Lewis and his associates state that an epidemic of tinea capitis in New York City caused by Microsporon audouini and involving several thousand children has been spreading for more than a year. The report of a school nurse in this district regarding an unusually large number of children with infected scalps induced the district health officer to establish a diagnostic center to find the extent of the infection, to assist in diagnosis and to advise practitioners. All known infected children were asked to come to the diagnostic center for examination. They were examined under the filtered ultraviolet rays, a culture was taken and clinical records were kept. All child contacts were examined. New cases were soon found. The past treatment was appraised and, if unsatisfactory, the physician was told of the advantages of referring the patient to a skin clinic or to a dermatologist for the special care required. Each case was followed up by the diagnostic center until cured. Follow-up treatment had to be instituted in cases in which the x-ray epilation was incomplete. Absence from school became a problem, because it involved several hundred children in the district. Special classes formed for infected children functioned to the satisfaction of the children, the parents and the school and health authorities. After the patient was considered cured, two consecutive negative examinations by the diagnostic center, a week apart, were required before the child could return to school. Follow-up examinations were made at intervals of from two weeks to three months. Over a period of a little more than a year 432 children with tinea capitis were registered at the diagnostic center. Of these, 411 had an infection with M. audouini. By April 1, 1944 362 of these were known to be cured, while 70 cases were still active. New cases have decreased considerably. The authors make recommendations on measures to control the epidemic in New York City. The health department should lead by declaring the disease reportable, surveying all schools periodically, setting up diagnostic clinics in districts where the disease is prevalent and disseminating information to the general public. Filtered ultraviolet rays (Wood light) are essential in case finding and in determining when cure has taken place. Infections caused by M. audouini should promptly receive the benefit of x-ray therapy.

War Medicine, Chicago

5:267-348 (May) 1944

*Emotional Albuminuria. J. H. Ahronheim.—p. 267.

The Guardhouse Inmate, with Brief Discussion of Psychopathic Personality. W. Rottersman.—p. 271.

Strain of Right Rectus Muscle Simulating Acute Appendicitis. E. D. Babbage, C. W. McLaughlin Jr. and R. L. Fruin.—p. 280.

Canadian Army Night Vision Training and Testing Unit. D. McEachern and B. D. B. Layton, and E. G. Burr.—p. 283.

Aedes Scutellaris Hebridens Edwards: A Probable Vector of Dengue in New Hebrides. R. H. Daggy.—p. 292.

Complications of Scabies. L. Goldman.—p. 294.

Sanitary Control and Operation of Swimming Pools. M. Lieber.—p. 299.

Hyperventilation Syndrome in Flying Personnel. R. F. Rushmer and D. D. Bond.—p. 302.

*Migraine-like Syndrome Complicating Decompression Sickness. G. L. Engel, J. P. Webb, E. B. Ferris Jr., J. Romano, H. Ryder and M. A. Blankenhorn.—p. 304.

Emotional Albuminuria.—Ahronheim noted that applicants for training as air cadets who after withdrawal of blood for a Kahn test had fainted or had felt faint almost invariably had considerable amounts of protein in the urine although a specimen of urine obtained prior to the withdrawal of blood had been free of albumin in a good percentage of cases. The regularity with which this phenomenon appeared in such persons as well as the increase in albumin in the second specimen following

a first specimen containing albumin suggested a relationship between the emotional upset precipitating fainting and the presence of protein in the urine. In order to substantiate this conception, the author made investigations on 1,000 young men between the ages of 17 and 26 who seemed to be perfectly healthy. Two specimens of urine were obtained during a period of about fifteen minutes, the second voiding being preceded by withdrawal of blood for a Kahn test. Only 446 of the 1,000 men gave negative reactions for albumin in both specimens; the other 554 men had positive reactions in one or both specimens, and in 504 of these albuminuria appeared after withdrawal of blood for the Kahn test. Of the 127 men who had fainted, only 3 had negative reactions in both specimens. The author thinks that the albuminuria was precipitated by emotional factors. There was no relationship between emotional albuminuria and the Schneider index. The intensity of albuminuria decreases with advancing age. Albuminuria in apparently healthy persons with a normal history is insignificant. It is possible that emotional albuminuria may be utilized as a test for emotional instability.

Migraine-like Syndrome Complicating Decompression Sickness.—According to Engel and his co-workers visual disturbances are common among subjects experiencing decompression sickness during exposure to simulated high altitudes in a decompression chamber. Blurring of vision or scotomas are usually followed by headache. This report is based on a series of 1,361 exposures of 155 subjects to simulated altitudes of 30,000 to 38,000 feet. Seventeen subjects experienced scotomas a total of 46 times; 36 instances occurred in 971 exposures at 35,000 feet, 9 in 383 exposures at 38,000 feet and 1 in an exposure at 30,000 feet. Anoxia was not present. It is apparent that these symptoms occurred repeatedly in some persons and not at all in others. The reaction always occurred after decompression sickness had developed, but it was unrelated to altitude; most often it developed five to thirty minutes after descent, but when it developed at altitude its course was uninfluenced by remaining at altitude or by descent. Although complicated by syncopal symptoms in some instances, the reaction was not related to syncope. Visual field studies revealed that the scotomas were homonymous, that they shifted rapidly in position, always moving peripherally, and that they were sometimes multiple. Headache, which was always contralateral to the scotomas, began when the scotomas had disappeared and was sometimes associated with nausea and vomiting. Electroencephalograms during two reactions revealed focal abnormalities in the cortex corresponding to the focal neurologic signs. The close similarity of the reaction to clinical migraine led the authors to inquire into the past history of migraine among the 115 subjects. A highly significant incidence of migraine headaches was found among the subjects susceptible to the reaction. These visual disturbances obviously represent a hazard during flying and landing operations. The fact that scotomas may exist for some time before the subject becomes aware of them and the frequency with which they seem to develop during descent suggest the possibility that they may be potentially responsible for landing accidents. Two steps would greatly decrease the incidence of those reactions among flying personnel engaged in high altitude work: (1) adequate preselection to eliminate persons susceptible to decompression sickness and (2) elimination of candidates with a history of clinical migraine unless their susceptibility to decompression sickness is low.

Wisconsin Medical Journal, Madison

43:603-644 (June) 1944

Upper Urinary Tract Problems in Infants and Children. N. W. Bourne.—p. 603.
Experiences with Parenteral Use of Amino Acids. A. R. Curreri and O. V. Hibma.—p. 609.
Importance of Early Recognition of Congenital Dislocation of Hip. V. C. Turner.—p. 613.
Cancer of Bowel: Some Remarks on Diagnosis and Treatment. C. F. Dixon.—p. 618.
Diabetes in Pregnancy. G. S. Kilkenny.—p. 622.

43:665-764 (July) 1944

Present Status of Hemorrhagic Diseases. F. W. Madison.—p. 688.
Inaccuracy of Pelvic Examinations. E. F. Mielke.——p. 693.
Heart in Pregnancy and Labor. W. C. Danforth.—p. 698.
Faulty Posture in Children. D. J. Ansfield.—p. 703.
Electroencephalography in Children. M. G. Peterman.—p. 708.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J. Children's Diseases, Dorking, England

41:31-70 (April-June) 1944

*Meningitis in Children Refractory to Sulfonamides. R. Gross-Heisler and E. Davis.—p. 31.
*Pathogenesis and Clinical Symptoms of Tuberculous Meningitis. S. Engel.—p. 34.

Meningitis in Children Refractory to Sulfonamides.—Gross-Heisler and Davis point out that an impression prevails that treatment of meningitis other than tuberculous has been revolutionized by the sulfonamides. They describe 6 refractory cases they saw in the course of the last eighteen months. The ages of the children ranged from 3 months to 7 years. Two of the 6 patients had adrenal hemorrhage, and 1 of them fell into the category of the so-called Friderichsen-Waterhouse syndrome. Four patients with streptococcic and staphylococcic meningitis died despite intensive therapy with various sulfonamides. It is suggested that as soon as penicillin becomes available it should be used for such cases.

Pathogenesis and Clinical Symptoms of Tuberculous Meningitis.—According to Engel, tuberculous meningitis occurs most frequently in young children, and often in the first few months after the primary infection. Macroglandular caseation may pave the way for the secondary spread. The route of infection does not run directly from the primary complex to the meninges via the blood stream. The brain and plexuses in 13 cases of tuberculous meningitis in children have been investigated. Cortical foci and tuberculomas could not be found. Choroid plexus changes were present in every instance, but they were of a peculiar nature and not typical tubercles. The changes of the choroid plexuses suggest that they infect easily the ventricular fluid; they are numerous although minute by themselves but more likely to infect the fluid than solid tubercles or large caseous masses. Giant cells and caseation were present in advanced cases. Usually it is the final stage that presents itself at necropsy, but the author was able to observe a case in the initial stage. In spite of the early stage of the meningeal process the choroid plexuses showed the typical changes, but tubercle bacilli were abundant this time, contrary to the former findings. The choroid plexuses, it seems, breed initially an enormous number of bacilli, which drop from the decaying villi into the ventricular fluid and proceed from there through the natural communications to the basal spaces, thus producing basal meningitis. Tuberculous meningitis cannot be considered as an isolated occurrence in tuberculosis; it is always part of miliary tuberculosis. The author emphasizes that the so-called classic picture of tuberculous meningitis applies only to a minority of cases among young children. In children of school age it is more frequent. It is advisable to use the dermographia test in doubtful cases, which is usually intense in cases of brain pressure.

Journal of Endocrinology, London

3:323-410 (May) 1944

Staining Basophil Cells of Human Hypophysis, with Special Reference to Abnormal Basophil Cells of Cushing's Syndrome. N. G. B. McLetchie.—p. 323.
*Pituitary Basophilism Syndrome of Harvey Cushing. N. G. B. McLetchie.—p. 332.
Carcinoma of Adrenocortical Rest Associated with Hypophysial Abnormality. N. G. B. McLetchie and L. D. W. Scott.—p. 347.
Disturbances of Water Balance in Rat on Removal of Adrenal Medulla. L. Stein and E. Wertheimer.—p. 356.
Nature of Hyperossification Observed in Long Bones of Rats Treated with Excessive Doses of Estradiol Benzoate. H. N. Lippman and J. B. de C. M. Saunders.—p. 370.
Production of Ovulation in Immature Rat. I. W. Rowlands.—p. 384.
Additional Studies of Extrathyroidal Metabolism of Iodine. A. Chapman, G. M. Higgins and F. C. Mann.—p. 392.
Ateleiotic Dwarfism with Normal Sexual Function: Result of Hypopituitarism. T. F. Hewer.—p. 397.
Observations on Estrogenic Potency of Stilbestrol in Guinea Pig. P. Bacsich and G. M. Wyburn.—p. 401.

Cushing's Pituitary Basophilism.—McLetchie reports the history of a man aged 32 who presented symptoms indicative of Cushing's syndrome. Necropsy revealed that here the pituitary basophilism was not associated with hypophysial, adrenal

or thymic tumor and that there was no adrenal hyperplasia. The abnormalities present in the anterior pituitary were (1) a conspicuous degree of basophil cell hyalinization, (2) an excessive degree of basophil cell vacuolation, (3) multifocal basophil cell vacuolation in the individual cells associated with excessive disappearance of granules and with the revelation of a refractile cytoplasmic envelop surrounding the vacuoles (cobweb vacuolation), (4) nuclei of the basophil cells normal but in many cells cobweb vacuolation associated with displacement of the nuclei to the periphery of the cells and with compression and scalloping of the nucleus by the vacuoles with numerous binucleate basophil cells, (5) the basophil cells increased in size and (6) the acidophil cells greatly reduced in size. These findings are contrasted with those in 2 other cases of basophilism, with those in nonbasophilism cases and with those of other recorded descriptions of the abnormal basophil cells of basophilism. The author stresses that the abnormalities of size and vacuolation found in the chromophil cells are (1) inconstant in basophilism and (2) not associated with a particular pathologic type of basophilism. The cobweb vacuolation and nuclear scalloping in the basophil cells is similar to what Severinghaus and others have interpreted as nuclear "blistering." It is suggested that the abnormalities of size and vacuolation in the chromophil cells represent a phase of reaction to hypogonadism and are of only secondary importance in the morbid process of basophilism. The author briefly discusses the correlation between the different pathologic types of basophilism. He also directs attention to the relation of the morbid process of Cushing's syndrome to the changes produced in rats fed on a diet containing a high proportion of Brassica seeds. He thinks that basophil cell hyperactivity is the essential abnormality of Cushing's syndrome and that basophil cell hyalinization is a cytoplasmic change resulting from hyperactivity.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

51:85-180 (April) 1944

*Some Recent Studies and Investigations in Sterility. A. Sharman. —p. 85.
Pattern of Contractions of Pregnant Uterus Under Spinal Anesthesia and the Attendant Changes in Reactivity of Myometrium. P. Malpas. —p. 112.
Occurrence and Significance of Clostridium Welchi in Female Genital Tract. R. Salm.—p. 121.
Case of Osteomalacia in Pregnancy. H. R. MacLennan.—p. 127.
Posteclamptic Kyphosis. G. Bierer.—p. 130.
*Hogben Pregnancy Test with Note on Breeding of Xenopus for Test. F. W. Landgrebe and L. Sampson.—p. 133.
Trichlorethylene and Midwifery. W. Clavert.—p. 140.
Amyoplasia Congenita Causing Malpresentation of Fetus. Mildred I. Ealing.—p. 144.
Primary Melanosarcoma of Vagina: Case Report. Y. M. Bromberg and A. Brzezinski.—p. 147.
Self Retraction of Uterus After Portes Operation. H. Hofmann.—p. 150.

Investigations on Sterility.—Sharman discusses certain selected aspects of sterility, namely (1) the estimation of tubal patency, (2) anovular menstruation as assessed by endometrial biopsy, (3) endometrial tuberculosis, (4) the causation of tubal occlusion, (5) seminal analysis and (6) the results obtained by a follow-up investigation. The observations are based on a consecutive and unselected series of 500 cases of primary sterility which have been followed up for several years and a number of more recent cases which have been the subject of particularized research. Estimation of tubal patency was done on 480 women, of whom about half had two or more insufflations. Insufflation revealed nonpatency in 38 per cent of the cases. Of 358 patients in whom biopsy was performed premenstrually, 6.4 per cent exhibited anovular cycles. Of 392 patients in whom biopsy was performed, 5.1 per cent showed unsuspected tuberculous endometritis. Seminal examination of 114 husbands revealed normal characters in 68.4 per cent, pronounced deficiency in 13.2 per cent and azoospermia in 18.4 per cent. Of 409 cases traced, pregnancy occurred in 116, i. e. 28.3 per cent. Pregnancy did not occur where anovular cycles or endometrial tuberculosis or azoospermia was present (with the exception of 2 cases of anovular cycles after treatment). In 152 of 293 sterile marriages infertility factors were found that would render pregnancy impossible or unlikely. The author thinks that if a greater number of cases had had endometrial biopsy and seminal examination performed there is little doubt that the infertility factors of anovular cycles, tuberculous endometritis and azoospermia would have appreciably reduced the figure of 141 cases in which, as far as investigation went, no reason was discovered for the infertility of the marriage. His studies on tubal patency by means of insufflation on a series of 1,063 revealed that true nonpatency exists in from 25 to 30 per cent of cases of primary sterility. The percentage of error in insufflation and in hysterosalpingography is about equal, but the error in the former is reliance on a single test, which error can be avoided by repeating the test, whereas the error in hysterosalpingography is in the reading of the plates and is not always remediable. In a further 491 consecutive and unselected cases of primary sterility 27 (5.5 per cent) have shown unsuspected endometrial tuberculosis. This gives a total incidence of 5.3 per cent in 883 cases. In cases in which gross tubal damage is not present, tubal occlusion is rarely due to gonococcic salpingitis or to congenital hypoplasia. Evidence is produced to show that blockage in a considerable number of cases is due to subclinical tuberculous salpingitis.

Hogben Pregnancy Test; Breeding of Xenopus.—According to Landgrebe and Sampson the South African clawed toad Xenopus laevis was first introduced as an assay animal by Hogben in 1930, who observed ovulation of Xenopus after injection of anterior pituitary lobe extract. The authors describe their experiences with the Hogben test. Of a total of 258 tests they were able to check 220 against ultimate clinical observations, and of these 218 were found correct. The 2 exceptions were patients with menopausal symptoms. The authors emphasize that the Hogben test for pregnancy, using the Scott technic for extraction of the urine, is as reliable as any other test, provided at least ten days elapse since the first missed period. Menopausal urines extracted by precipitation technic often gives a positive Hogben test in the absence of pregnancy, but with the Scott extraction method the test gives a negative result in these cases and also gave a negative result in 2 pregnant patients showing menopausal symptoms at the time of the test. The Hogben test is more rapid and requires much smaller demands on laboratory routine than other tests. At 22 C. a result is obtained within eighteen hours, and the animals require feeding and cleaning only once a week. The test is much less expensive than the Friedman or the Aschheim-Zondek in both food and animal costs. Two toads are sufficient for each test if they are in good condition. Each toad was used over twenty-four times and still respond satisfactorily. Laboratory bred Xenopus toads can be used for the test and are capable of producing a second generation which will also respond to pregnancy urine extracts.

Transactions Royal Soc. Trop. Med. and Hyg., London

37:347-452 (May) 1944

*Heat Effects in British Service Personnel in Iraq. T. C. Morton. —p. 347.
Lizard Filariasis: Experimental Study. T. B. Menon, B. Ramamurti and D. S. Rao.—p. 373.
Portal Cirrhosis in Iraq. R. S. Stacey.—p. 387.
Lobar Pneumonia in African Soldiers. T. Simpson.—p. 399.
Kala-Azar in East Africa. A. C. E. Cole.—p. 409.
Cutaneous Leishmaniasis in Nigeria. B. G. T. Elmes and R. N. Hall. —p. 437.
Abdominal Pain in Diagnosis of Early Kala-Azar. E. Burke.—p. 441.
Unusual Case of Kala-Azar Successfully Treated with Stilbamidine. M. A. Shellim.—p. 447.
Asthma Produced by Ascaris Infestation. K. V. Earle.——p. 451.

Heat Effects in British Service Personnel in Iraq.—Morton divides heat effects into heat syncope, heat exhaustion and heat hyperpyrexia, because the clinical picture is as a rule clearcut and the prognosis and treatment are radically different. Syncope occurs in temperate climates, in hot stuffy atmospheres and also in heavily overladen soldiers on the march. It is a temporary cardiovascular collapse which, like other faints, may progress to severe prostration with giddiness, a small soft fluttering pulse, shallow breathing, dilated pupils, a cold skin and subnormal temperature. The patient is bathed with a cold clammy sweat, and severe headache and mental confusion may follow. Death may occur in cases of heart disease. Treatment consists in dorsal decubitus in a cool place, the loosening of tight clothing and the bathing of the face with cold water together with the application of ammonia to the nostrils and a small dose of sal volatile. Electrolytic imbalance and dehydra-

tion appear to be of primary importance in the genesis of heat exhaustion. The lean, spare type with a low systolic pressure is particularly prone to heat exhaustion. The quantitative estimation of the urinary chlorides is a simple and reliable test in the differential diagnosis of these cases, and sodium chloride and glucose are a safe and effective remedy. If intravenous therapy is indicated, this must be controlled by charting the intake and output and estimating the hemoconcentration; otherwise there is a risk of pulmonary edema. The prognosis in heat exhaustion is excellent, provided the condition is recognized in time and adequately treated. Heat hyperpyrexia is always a grave syndrome: the mortality is usually at least 30 per cent and may be considerably more. Alcohol and age are accessory and adverse factors, and the condition is more frequent in the fat and plethoric. The essential factor is the failure of the heat regulating center with the suppression of sweating, although in the more protracted cases it is probable that an autointoxication is responsible for the prolonged pyrexia. Thermantidote measures and the nursing of these patients in artificially cooled wards are the basis of treatment. Ample cool drinking water containing 10 grains (0.65 Gm.) of sodium chloride to the pint, together with a total consumption of at least 1 ounce (30 Gm.) of sodium chloride a day is a paramount necessity in all endemic areas during the hot weather. The provision of air conditioned or artificially cooled wards in hospitals in endemic areas is essential.

Helvetica Medica Acta, Basel

11:1-334 (April) 1944. **Partial Index**

Diabetic Glomerulosclerosis. O. Spühler.—p. 27.
Clinical Aspects of Malignant Nephrosclerosis. F. Wuhrmann.—p. 31.
Elimination of Sulfathiazole in Renal Insufficiency. M. Demole and P. Guye.—p. 39.
Rudimentary Infarct of Anterior Wall as an Acute Process. M. Holzmann.—p. 47.
Gastroduodenal Ulcers and Coronary Syndromes. R. Junet.—p. 75.
*Spinal Varicosities. E. Uehlinger and O. Gsell.—p. 85.
Frequent Occurrence of Temporary Eosinophilic Pulmonary Infiltrates. F. Leutenegger.—p. 111.
Cutaneous Tests with Ascarides Extract in Temporary Eosinophilic Pulmonary Infiltrates. E. Zweifel.—p. 117.
Pulmonary Function in Silicosis. E. Jéquier-Doge and M. Lob.—p. 123.
Cirrhosis of Liver and Central Nervous System. E. Martin, G. de Morsier and P. Alphonse.—p. 141.
Quinine and Bone Marrow. J. P. Chapuis and G. Hemmeler.—p. 195.
New Investigation on Iron Metabolism: Variations in Iron Content of Serum During Course of Day. G. Hemmeler.—p. 201.
Pathology and Therapy of Nonspecific Inflammatory Arterial Diseases. A. von Albertini.—p. 233.
Thrombosis of Internal Carotid Artery and Its Relation to Endangiitis Obliterans of Winiwarter-Buerger. H. Krayenbühl and G. Weber.—p. 289.

Spinal Varicosities.—According to Uehlinger and Gsell, dilatation and serpentinization of the veins of the spinal cord may cause changes in the medulla and irritation of nerve roots. Clinically it becomes manifest in two syndromes: (1) as an apoplectic form and (2) as a neuralgic paralytic form. The authors describe 2 cases observed by them during the past year. The first belonged to the group of juvenile apoplexy. The patient, who died at the age of 28, had a first apoplectic attack after a scare at the age of 18 and a second fatal stroke ten years later, both from complete well-being. The first acute spinal apoplexy resulted in flaccid tetraplegia, singultus, priapism, impairment of voluntary urination and defecation and in disturbance of sensibility. Meningitic symptoms were absent. The clinical course was that of a typical hematomyelia in the lower cervical cord with perforation of the hemorrhage into the subarachnoid space. The paralytic symptoms commenced to regress after a few hours. The attack terminated in complete restoration of motility and sensibility of the left arm and the legs, but in the right arm and shoulder region an atrophic paresis remained. After an interval of ten years a second spinal apoplexy suddenly developed. The attack was followed by death within ninety minutes. There was pulmonary edema but again no loss of consciousness. Necropsy explained both attacks as acute hematomyelia, originating in a varicose network on the cervical spinal cord. Whereas the first attack had destroyed only some segments of the right lower cervical spinal cord, in the second attack the hemorrhage extended upward and downward with perforation into the ventricle and the central canal of the spinal cord. The second patient, a man aged 48, experienced acute pain in the lumbar region which developed into a syndrome of radicular sciatic neuritis first unilaterally and later bilaterally; death was caused by transverse lumbar myelitis. Necropsy disclosed spinal varicosis near the cauda. Spinal varicosis may be a partial manifestation of a status varicosus or it may be limited to the spinal cord. The condition is more frequent in the male than in the female, as was demonstrated by Globus and Doshay in 1929. The apoplectic form usually appears earlier in life than the neuralgic paralytic form. The presence of extraspinal varicosities, such as varicose veins or hemorrhoids, may be of help in the diagnosis. Laminectomy with spinal decompression may lead to the arrest or even the regression of the symptoms of spinal varicosis. Observations so far do not indicate resection of the spinal varicosities, since the effect of this intervention cannot be foreseen.

Schweizerische medizinische Wochenschrift, Basel

73:989-1012 (Aug. 14) 1943. **Partial Index**

*Nephrotic Hypertension Syndrome in Diabetes and Kimmelstiel's and Wilson's Intercapillary Glomerulosclerosis. M. Auroi.—p. 989.
Castellani's Bronchospirochetosis: Case. S. Moeschlin.—p. 995.
Atrophy of Left Kidney Due to Ascending Venous Thrombosis: Case. A. Müller.—p. 998.
Study of Loss of Tendon Reflexes in Lower Extremities in Course of Cerebral Tumors. M. Schachter.—p. 999.
Toxicity of Sulfonamides and Vitamin B1. A. Fleisch and T. de Preux.—p. 1001.
Anesthesia of Short Duration Induced with 1-Methyl-5,5-Allyl-Isopropyl-Barbiturate Sodium ("Narconumal Roche"). G. Reimann-Hunziker.—p. 1003.

Nephrotic Hypertension Syndrome in Diabetes and Kimmelstiel's and Wilson's Intercapillary Glomerulosclerosis.—Auroi describes 4 cases of women 64, 54, 45 and 60 years of age with diabetes, presenting Kimmelstiel's and Wilson's nephrotic hypertension syndrome. The condition in these and in similar cases described in literature is anatomically characterized by a peculiar primary independent hyalinization of the glomeruli. It may remain clinically latent, or albuminuria, arterial hypertension with its sequels in the circulatory apparatus and renal insufficiency, i. e. the common picture of glomerular disease may be presented, depending on the degree and extent of the lesions. The nephrotic syndrome (hypoproteinemia and edema) should be considered coordinated or subordinated to the glomerular process, in correspondence to the findings in diffuse glomerulonephritis with nephrotic type of edema. Diabetes associated with advanced age may safely be assumed to be the etiologic factor. There were only a few exceptional cases in which the intracapillary glomerulosclerosis was not associated with diabetes. Latent diabetes, however, or aglycosuric diabetes resulting from an increase in the renal threshold was probably present in those instances. A masked diabetes should be watched for in individuals of advanced age presenting the nephrotic hypertension syndrome. The finding of intracapillary glomerulosclerosis at necropsy strongly suggests the premortal presence of diabetes. The course of the fully developed intracapillary glomerulosclerosis is rapid, and death from cardiac insufficiency, uremia or apoplexy will occur within two to three years.

Revista de la Policlinica Caracas, Caracas

13:93-156 (March-April) 1944. **Partial Index**

*Therapy of Parkinson's Syndrome by Vitamin B6 (Pyridoxine). A. Sanabria and L. A. Muro.—p. 125.

Vitamin B_6 Therapy of Parkinsonism.—Sanabria and Muro administered vitamin B_6 to 11 patients with parkinsonism. The drug was given intravenously on ten consecutive days in daily doses of 50 mg. The treatment was continued after the ten days only on patients who improved during its administration. It was given intravenously every other day in doses of 50 mg. and also by mouth in 10 mg. doses on the days on which the drug was not injected. By the end of the treatment tremor was almost completely controlled, and muscular rigidity and muscle tone were greatly improved in 4 cases. Walking was regained in 1 of the 4 cases. Tremor alone was controlled in 1 case. No effect from the treatment was observed in 6 cases. Sialorrhea was not affected in any case. Best results were obtained in early cases. The fact that the drug is expensive makes its use less available than that of the alkaloids of belladonna.

Book Notices

Clinical Tropical Medicine. By Twenty-Seven Authors. Edited by Z. Taylor Bercofitz, M.D., Ph.D., F.A.C.P., Assistant Clinical Professor, New York Post-Graduate Medical School, Columbia University, New York. With foreword by Wilbur A. Sawyer, M.D., Director, International Health Division, Rockefeller Foundation, New York. Cloth. Price, $14. Pp. 957, with 141 illustrations. New York & London: Paul B. Hoeber, Inc., 1944.

This attractive volume is a useful addition for any medical library. It is handsomely printed, and there is an agreeable and rare paucity of typographic errors. The form is monographic and the authors' list includes many accepted authorities such as C. F. Craig, Lee Foshay, Howard Fox, A. W. Grace, A. V. Hardy, G. W. McCoy, K. F. Meyer, Morris Moore, Henry Pinkerton, J. F. Siler, F. L. Soper, E. B. Vedder and W. H. Wright, to mention only some.

The volume is too large for easy handling, and its values are spotty. It might have been improved by condensation of certain subjects such as rabies, psittacosis and tularemia, and by omission of such subjects as poliomyelitis, smallpox, varicella, typhoid, epidemic encephalitis and trachoma. A few sections could well be amplified and brought up to date. In the latter group are the short, almost fragmentary sections on personal hygiene and sanitation in the tropics, where specific recommendations would be of more value than trite generalizations. Mosquito control is barely mentioned in this section. Acclimatization, environmental effects of geography and social climate and medical geography are not discussed and hardly clearly mentioned. Yet on these will depend much of what mankind accomplishes in the future in regions of warm climate. Problems of housing, food supply and future transport and communications could have their medical groundwork laid now, and this would have been within the field of a monographic review of tropical medicine.

More in detail the following comments occur to the reader. The discussion of sprue, beriberi, pellagra and scurvy by E. B. Vedder is splendid. It is preceded by a clear, comprehensive and up to date description of the vitamins. Outside of trichina, filaria and schistosomes, helminths are well covered as to epidemiology, prevention and treatment. Trichinosis is poorly covered, especially in respect of subclinical infection, epidemiology, geography, animal sources, digestion of biopsy material and suspected meat, and prophylaxis by refrigeration. The space allotted to Wuchereria bancrofti is far less than that for trichinosis. This section is poor, as is also the sketchy review of schistosomes.

While the biology and diagnosis of amebiasis are discussed at length, the bacteriologic diagnosis of bacillary dysentery is only mentioned and not described. The review of treatment of bacillary dysentery is sketchy and incomplete without critical comparison of sulfonamide drugs. The paragraph on transfusion could better have been omitted. The special diet list and instructions are redundant, unnecessary and inaccurate, while the advice on bacteriophage is equivocal. In fact, the section on the treatment of bacillary dysentery is poor and not up to the level of most chapters in the book.

The discussion of cholera by Joseph F. Siler is unusually satisfactory. Malarial sections in general are diffuse, not clear, often inexact and ambiguous, and the presentation of distribution is quite inadequate. Reference is made to Sir Andrew Balfour as if he were still alive in Khartoum. In connection with the differentiation of malaria and kala azar, it is scarcely correct to say that it is by microscopic examination of the blood alone. Some odd spellings have slipped by, as "comatous" for "comatose" and (on page 3) "aesophagostomum" for "oesophagostomum." One questions the usefulness of a clinical classification of subtertian malaria by symptoms rather than by underlying pathologic changes, and it is not allowable to refer to gametocytes as developing from schizonts.

The treatment of malaria should be revised and better organized. Many would not agree with the flat rules that any person from an endemic area should receive 10 grains daily of quinine for eight weeks, that sufficiently long use of quinine will eliminate "malarial infections" or that "when it is impossible to administer quinine by mouth, atabrine should be used." There is no discussion of varying objectives of treatment under different conditions, as for instance various military and civilian requirements, or of varying requirements of different ptasmodia or of utilization of malarial immunity in treatment. In spite of the aforementioned quotation, the statement is also made that all who "return by ship from tropical or highly endemic areas" should receive atabrine 0.1 Gm. thrice daily for five to seven days and then 0.1 Gm. daily for two months. Discussion is lacking of the basic pharmacology of the antimalarial drugs and of the relation of transfusion to malarial transfer. Mosquito control and malaria prophylaxis (suppression) are sketchy and quite inadequately presented. Reference is not made to species attack or to spraying, and final advice is given that "people who live in malarial districts should not leave their houses between sunset and sunrise."

A distorted clinical picture follows mention of gallstones as a complication of blackwater fever. Under trypanosomiasis, synonyms of "Bayer 205," e. g. "germanin," should be given. American trypanosomiasis by this time should certainly be divorced completely from thyroid disease and the chapter brought within range of present day knowledge.

The date of publication of the volume should have included the final demonstration of the sandfly vector of leishmaniasis by Swaminath, Shortt and Anderson in 1942. American leishmaniasis is not clearly presented, nor the geographic spread of oriental sore. Howard Fox, in valuable reviews of pinta and yaws, carefully but firmly pays his respects to Admiral Butler while maintaining the difference between yaws and syphilis.

The discussion of the rickettsioses by Pinkerton is clear and of sound clinical value. Soper on yellow fever has given an authoritative and useful survey. The clinical discussion of mycoses by Morris Moore is excellent, as are also the short chapters on snake bite by J. A. Oliver and Dudley Jackson. The material on noxious arthropods is scattered and not easily assembled for use, and in general the descriptions are not sufficient for rough identification.

This volume is therefore of variable and spotty value. The major part is excellent, well written by authorities. Other parts fall short of this level. For the purpose of a monographic clinical presentation of tropical medicine it needs additions, deletions and some rewriting, as already noted.

Chemical Analysis: A Series of Monographs on Analytical Chemistry and Its Applications. Editorial Board: Beverly L. Clarke, I. M. Kolthoff and Hobart H. Willard. Volume I: The Analytical Chemistry of Industrial Poisons, Hazards and Solvents. By Morris B. Jacobs, Ph.D., Senior Chemist, Department of Health, City of New York. Second revised reprint. Cloth. Price, $7. Pp. 661, with 110 illustrations. Volume III: Colorimetric Determination of Traces of Metals. By E. B. Sandell, Ph.D., Assistant Professor of Analytical Chemistry, University of Minnesota, Minneapolis. Cloth. Price, $7. Pp. 487, with 73 illustrations. New York: Interscience Publishers, Inc., 1944.

Physicians encountering industrial health problems and especially those who are concerned with the prevention of industrial disease will find volume I valuable. Designed primarily to summarize practical applications of analytical chemistry in industrial hygiene, it also serves as a reference work on the occurrence of hazard, physical properties, toxicity and physiologic response and methods of detection of a large number of substances currently employed in modern industrial production. The monograph is well organized. The analytical methods are clearly stated and well supported by adequate references to the original literature. The introductory portion of the text is devoted to the general consideration of industrial hygiene and industrial poisons, sampling, gasometry and methods for the handling and examination of dusts. Subsequent chapters give information on silica, various metals, compounds of sulfur, phosphorus and nitrogen, oxygen and ozone, halogen compounds, carbon monoxide, carbon dioxide, hydrocyanic acid and cyanogen. Almost half of the book is utilized to present the properties, actions and modes of estimation of some one hundred and twenty-five organic substances, including industrial solvents, raw materials of manufacture and chemical warfare agents. An appendix contains useful tables, among which are several concerned with the probable safe concentration limits of exposure for gases, vapors, metallic and other dusts and fumes.

Volume III was designed to present a number of useful, modern methods for the determination of small amounts of

each of forty-five different elements, exclusive of the information provided on the rare earth elements. In the first part of the text a critical discussion of colorimetric trace analysis is given. General methods for the separation and isolation of small quantities of the elements by chemical and physical means are outlined and evaluated. There follows a logical treatment of colorimetric and spectrophotometric measurements, with discussion of their place in the estimation of trace elements. Nineteen colorimetric reagents which find practical application in trace analysis and the nature of their reaction types and specificity are described in the final chapter of this general part of the book. The remaining three fourths of the text is devoted to the discussion of the various elements encountered in practical trace analysis. Each element is considered in detail—separations, methods of determination and application of the methods given are presented. Although colorimetric methods for the determination of substances have been frowned on by some investigators as being peculiarly subject to error, such methods prove to be invaluable in the hands of investigators who take the trouble to consider the underlying principles involved. An understanding of the limitations of colorimetric and photometric technics, coupled with knowledge of the fact that annoying but surmountable interferences may occur in many chemical reactions, permits of a wide range of their application. This book on trace metal determination is well written; it contains many carefully chosen references to the original literature and to earlier compilations in the field of colorimetry. The author has made judicious use of structural formulas, tables and charts to clarify the subject and to illustrate the practical limitations of many of the procedures. Although the book is not directed specifically to the needs of the clinician, it should prove to be of great value to those investigating the influence of trace elements in biologic phenomena.

The Hogg Foundation Reports: A Summary of Three Years Work—A Forecast of Next Steps. Robert L. Sutherland, Director, Hogg Foundation for Mental Hygiene. Paper. Pp. 32, with 4 illustrations. Austin: Hogg Foundation for Mental Hygiene, University of Texas, 1944.

This pamphlet describes the work of the first three years of the Hogg Foundation and presents plans for the future. Established through a gift of Will Hogg to the University of Texas, the foundation is dedicated to an improvement of mental hygiene in Texas by bringing together knowledge of sound principles of human development from the specialized fields of psychiatry, physiology, psychology and sociology and applying them to the "conditions of growth and development of all persons." The work of the foundation is carried on at three levels. The first level consists of lectureships "to carry the basic principles of mental health to many fields of interest as well as to many localities." At the second level the foundation provides planned instruction in mental hygiene for professional leaders who are engaged in, or are preparing to enter, human relations work. This includes the professions of medicine, nursing, school guidance, industrial personnel, case work, group work and the ministry of the religious counselor. At the third level the foundation is assisting in the establishment of diagnostic clinics to detect the signs of maladjustment at an early stage and provide treatment. The foundation plans to continue and expand its work and will carry out studies and provide assistance in the adjustment problems of the returning veterans. The program of the foundation is educational, stressing prevention and early diagnosis and treatment. Such an approach to health problems deserves further development in other fields of health. It is especially important in the field of mental health, of which our wartime experiences have made us acutely conscious.

Guiding the Normal Child: A Guide for Parents, Teachers, Students, and Others. By Agatha H. Bowley, Ph.D. With a foreword by D. R. MacCalman, M.D. Cloth. Price, $3. Pp. 174. New York: Philosophical Library, 1943.

This small work by an English psychologist is designed primarily for teachers but is also intended for parents. The dynamic psychology now current in our psychiatric thinking offers the theoretical background for the author; the Child Guidance Center and Nursery School provide the material for her observations of children and her practical and clinical presentations. The book will appeal more to educators and to psychologists than to parents. It is authentic in content but not too well organized. An abundant but not too discriminating bibliography is offered. The typography is easily readable; the unappealing format is perhaps to be attributed to wartime restrictions in book making. A glaring error in the table of contents startles the reader.

The Art and Science of Nutrition: A Textbook on the Theory and Application of Nutrition. By Estelle E. Hawley, Ph.D., and Grace Carden, B.S. Second edition. Cloth. Price, $3.75. Pp. 668, with 139 illustrations. St. Louis: C. V. Mosby Company, 1944.

In this edition the inclusion of the most recent advances in the science of nutrition constitutes the main addition. The present status of knowledge of vitamins and minerals is concisely and accurately recorded, with the recommended daily allowances of these elements listed. The material in the book is developed on the foundation of a thorough but direct and readily understandable presentation of the fundamental facts of normal nutrition. The abnormal states of vitamin deficiencies are gone into in some detail, with numerous excellent pictures demonstrating these conditions. The nutritional principles set forth in earlier chapters are later applied to the feeding of various population groups, from the family as a whole to its specialized members, such as infants, growing children and the aged. Consideration is given to the special physiologic requirements of pregnancy and obesity. Probably the strongest section of the book is that covering diet therapy. Here discussion is found of the dietary indications for every possible condition in which benefit may be expected from the use of a suitable diet. In addition to a statement of the principles involved, simple directions are given as to what foods to use and what to avoid. In many cases the discussion goes beyond the limits of nutrition by going into the etiology of the diseases and their symptomatology and differential diagnosis. The wisdom of this is questioned. The last section deals with the art of nutrition in the way of preparing foods for consumption. This part of the book consists of menus, lists of foods and reference tables of food values. Its didactic form leaves much to be desired for an artful presentation of the subject or the foods. It contributes little to the interest in the book, although it may be of value for reference. Altogether the entire work with its profusion of illustrations can be recommended as an excellent textbook for the instruction and practical use of nurses as well as practicing physicians.

A Textbook of Inorganic Pharmaceutical Chemistry. By Charles H. Rogers, Sc.D., Dean of the College of Pharmacy and Professor of Pharmaceutical Chemistry, University of Minnesota, Minneapolis. Third edition. Cloth. Price, $7.50. Pp. 704, with 52 illustrations. Philadelphia: Lea & Febiger, 1943.

The earlier editions of this textbook, appearing in 1930 and 1936, served as commentaries on the inorganic compounds which were to be found as official drugs in the tenth and eleventh editions of the United States Pharmacopeia and in the fifth and sixth editions of the National Formulary. The present volume has been revised to include all the inorganic salts of organic acids, as well as the inorganic substances recognized by the U. S. P. XII and the N. F. VII. As in earlier editions, the elements are considered in an order which makes the volume suitable as a textbook on inorganic chemistry. The history and occurrence, physical and chemical properties, qualitative tests, method of preparation and, in addition, pharmacologic action and general uses of the substances are included. This edition is well printed, and excellent use is made of chemical equations in the presentation of chemical properties. It might be argued that some additional material could well be added to certain chapters; for example, the chapter on gold and gold compounds might include a discussion of the chemistry and pharmacologic action of sodium gold thiosulfate. Designed primarily for the student of modern pharmacy, the book, nevertheless, should serve as a useful source of information for physicians who are interested in gaining familiarity with the history and chemistry of many of the drugs which they may daily prescribe.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TOPICAL APPLICATIONS OF SULFONAMIDES AND PENICILLIN

To the Editor:—What are the therapeutic possibilities in injecting suspensions of sulfadiazine, sulfathiazole or other sulfonamides directly into or around the sites of localized infections? Mention of such treatment has not been found in available literature. It is understood that the soluble sodium sulfonamide preparations employed for intravenous therapy could not be used in this manner because they are intensely irritating and cause tissue necrosis. However, the less irritating and less soluble sulfonamides injected in suspension might be more valuable because of their low solubility, the gradual solution of the crystals in the tissues producing prolonged high concentration in the area of the infection. It is conceivable that administration of sulfonamides by this route might have value in many localized infections including furuncles, carbuncles, felons, cellulitis, gas gangrene, suppurative arthritis and infected cysts. Perhaps by this method effective concentrations of sulfonamides might be brought to bear on such infections, while their relative concentration in the blood and the rest of the body would be low, thus avoiding the unfavorable reactions of large doses of the drugs by mouth. Might it be indicated to attempt to develop preparations of sulfonamides especially for this use, the desirable characteristics sought being a minimum amount of irritation to the tissues and the property of dissolving into the tissues slowly? 1. Has there been any work along these lines of either experimental or clinical nature, and if so what were the results? 2. What are the drawbacks and contraindications? Specifically, would the injection of small amounts of crystalline sulfathiazole or sulfadiazine suspended in water or isotonic solution of sodium chloride produce local irritation or necrosis? 3. If the procedure is not contraindicated, what dosage and form of administration is suggested for typical cases? If this method of approach has not already been tried and found worthless, what are its possibilities? Does it justify a program of investigation? Could penicillin be administered in a similar manner? M.D., California.

ANSWER.—1. There apparently is no extensive series of published data relating to experimental or clinical investigations of this type. However, suspensions of sulfanilamide in isotonic solution of sodium chloride have been injected into infected pleural cavities. This procedure has been associated with some improvement. Likewise, such suspensions have been introduced into the peritoneal cavity where suppuration has been present. Although observations have not been too extensive, the results appeared to be favorable. Suspensions of sulfanilamide and sulfathiazole have been used in the nasal and aural cavities with apparent clinical improvement.

2. It is difficult to see how such a procedure would be of much benefit in the therapy of soft tissue infections such as carbuncles, cellulitis or infected cysts. The main object in therapy is to keep such infections localized, and it is now the consensus of many authorities that this can be best accomplished by oral or parenteral administration of adequate doses of sulfadiazine or sulfathiazole. The pendulum appears to be swinging away from the routine topical application of the sulfonamides in the therapy of localized, suppurative lesions. The main objection to the routine injection of sulfonamide suspensions is that it might not accomplish the anticipated therapeutic response. Such a procedure might well cause some local irritation, but no considerable degree of necrosis.

3. Since oral or parenteral sulfonamide therapy combined with adequate surgical drainage appears to produce desired therapeutic responses in comparison with the local use of the drugs, one cannot become too enthusiastic about the proposed investigation.

Now that penicillin is becoming available in larger quantities, more profitable lines of investigation are opening up. Solutions of penicillin have been introduced into the pleural cavities in instances of suppurative infections with remarkable clinical improvement. It is unlikely that the injection of penicillin solution into soft tissue infections will offer any advantage over systemic treatment.

VITAMIN A FOR ACNE VULGARIS

To the Editor:—A dermatologist has prescribed 100,000 units of vitamin A to be taken daily for six months for the treatment of acne vulgaris. Is it dangerous for an 18 year old girl to take such large amounts of vitamin A for six months? What is the efficacy of such treatment? M.D., Tennessee.

ANSWER.—A hundred thousand units of vitamin A daily seems a moderate dosage. Lehman and Rapaport (THE JOURNAL, Feb. 3, 1940, p. 386) mention a single dose of 2,000,000 units given as a test for visual deficiency, and the authors themselves gave from 100,000 to 300,000 units daily for months to children with no bad effect. Harm from overdosage does not seem likely. Long continued treatment is necessary in most cases to obtain benefit from vitamin A. Its value in acne vulgaris has not yet been proved to the satisfaction of dermatologists generally. An excellent paper on the subject is that of Straumfjord (*Northwest Med.* **42**:219 [Aug.] 1943). He reports that 36 patients were entirely freed from lesions and 43 others were cleared except for an occasional papule or pustule. Of 28 of those wholly freed, 64 per cent were cleared in nine months or less and 89 per cent in twelve months or less. Some remained well without further dosage of the vitamin; others relapsed and had to resume the vitamin consumption. There were more of the latter group among those who had cleared comparatively early. Thus it is seen that the treatment is slow but harmless, and it is successful in a good percentage of cases—even some that had failed to improve on other methods of treatment. Scarring acne should receive other more rapid methods of treatment which can well be combined with the vitamin method.

TREATMENT OF WHOOPING COUGH

To the Editor:—What, if any, value has Sauer's vaccine following exposure to pertussis or during a current epidemic? A pertussis vaccine is available through the state laboratory service and is widely used by the local pediatricians in the treatment of pertussis. To date I have advised the parents of the children whom I have seen as follows: Isolate their children from exposure to the disease if possible. If they should develop symptoms, have the therapeutic series of treatments with the state provided vaccine; if not, wait until the epidemic subsides and then have the prophylactic series, using Sauer's preparation. I have based this advice on the assumption that it would take three to four months to develop immunity using Sauer's vaccine. In the meantime, if the children should develop symptoms, would they be sensitized to the extent that use of the therapeutic vaccine would be ill advised? M.D., New York.

ANSWER.—It is doubtful whether any pertussis vaccine is of value as a therapeutic agent; i. e., in the treatment of the disease. The Sauer vaccine, made with human blood, can be used repeatedly, if necessary, without any risk. Its chief use is as a preventive agent, especially in infants past 7 months of age.

In treatment of infants and frail young children ill with the disease, either after definite exposure or at the onset of definite symptoms, two doses of the human hyperimmune (lyophilized) pertussis serum may be beneficial. It is prepared by the Serum Exchange at the University of Philadelphia and is by far the most desirable therapeutic product available. The subject is discussed by Brennemann in his Practice of Pediatrics, volume 2, chapter 34.

"ENLARGED PORES" OF SKIN

To the Editor:—A woman aged 19 had been working in a defense plant. She had been exposed to excessive heat over a period of six months. She stopped working because the pores of her face (on the forehead and the tip of the nose) had become excessively enlarged and remained that way. Many preparations have been used in the last five months but to no effect on these enlarged pores of the skin, especially of the nose. J. T. Nardo, M.D., Somerville, Tenn.

ANSWER.—The texture of the skin can be changed by age, disease or alterations of the secretions of the endocrine glands. Sweating is a normal function of the skin, and no evidence has been found that excessive sweating can cause enlargement of the hair follicles. Efforts to lessen the size of the pores by external applications are not likely to succeed. Patting the skin or the application of heat, according to H. G. Goodman (Cosmetic Dermatology, New York and London, McGraw Hill Book Company, 1936, p. 217) causes a temporary swelling of the skin and lessening of the size of the follicular openings. Astringents have the same effect in a greater degree by causing a slight inflammation. Even so vigorous a measure as skin peeling is likely to result in only temporary effect. Unless the large pores are actually comedones, the use of roentgen rays to lessen the activity of the sebaceous glands seems hardly justifiable.

INJECTIONS FOR SPRAINS

To the Editor:—I wish to comment on the discussion of "Local Anesthesia Injections for Sprains" in Queries and Minor Notes in The Journal, July 15, 1944. The purpose of injecting painful areas in sprains with a local anesthetic is not only to give immediate relief from pain but, what is more important, to relieve spasm of the surrounding tissues, which always occurs following injury. The mere injection of the ligaments around a joint cannot repair the damaged tissues. Following the injection, the area should be massaged in order to avoid accumulation in any one area and pressure necrosis from procaine. Recovery is expedited by good support of the joint with proper strapping, which will support the joint and enable the patient to walk freely. This in turn will encourage lymph flow and return. For example, in the ankle joint, flexion and extension or the forward and backward movements of the foot are permissible; however, the rocking of the foot or ankle from side to side will stretch the afflicted lateral ligaments, which aggravates the injury. The method should not be condemned unless it is properly executed. The injection treatment is an adjunct and not a substitute for the practice of good surgery in the management of sprains. T. A. Ranieri, Lieut. (jg), (MC), U.S.N.R.